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THE AMERICAN INDIAN



Dog Dancer of the Plains
Maximilian, 1843. I

THE AMERICAN INDIAN

AN INTRODUCTION TO THE ANTHROPOLOGY
OF THE NEW WORLD

BY

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THIRD EDITION

GLOUCESTER, MASS.

PETER SMITH

1957

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PREFACE

This third edition of *The American Indian* is offered as a brief summary of anthropological research in the New World. Twenty years have passed since the first edition appeared, so a comparison of the accompanying volume with one of the first edition should give a rough idea of the advances made in research. In a review of this kind, it is necessary to summarize the synthetic works of specialists in the regions covered, and since such generalizations usually follow specific field studies, we must necessarily omit citations to many recent publications. Yet, since the same conditions confronted us in 1917, the two volumes are thus far comparable.

As stated in the original preface, this volume is an outgrowth of museum experience. Since the primary functions of museums are those having to do with the conserving of materials and making them available to persons seriously interested, the point of view assumed in this volume is mainly taxonomic, or classificatory and descriptive. In the pursuit of problems relative to man's body, his economic life, his material culture, and his art, we deal with objects; speech is made objective by texts and so subject to taxonomic treatment; beliefs, rituals, songs, etc., when not expressed in materials, can be described and in turn classified. We hope that our classificatory layout will give the background for such ecological, biological, geographical, economic, social, psychological, functional, and historical interpretations as the reader may care to develop.

CLARK WISSLER.

August, 1937.

CONTENTS

	Page
Preface	v
Introduction	xv

CHAPTER I

The Food Areas of the New World	I
Hunting Areas	3
The Salmon Area	9
The Area of Wild Seeds	11
The Agricultural Areas	12
General Discussion	19
Distribution of Narcotics	25

CHAPTER II

Domestication of Animals and Methods of Transportation	28
Canoes and Navigation	38

CHAPTER III

The Textile Arts	42
Spinning	44
Netting	47
Basketry	48
Cloth	53
Feather-work	59
Clothing	60

CHAPTER IV

The Ceramic Arts	66
Processes of Manufacture	68
Pottery Forms	72
Pottery Decoration	74

CHAPTER V

Decorative Designs	76
Textile Designs	77
Distribution of Designs	80
Symbolism	97

CHAPTER VI

	Page
Architecture	102

CHAPTER VII

Work in Stone and Metals	119
Types of Artifacts	122
Mines and Quarries	128
Metal Work	129

CHAPTER VIII

Special Inventions	132
------------------------------	-----

CHAPTER IX

The Fine Arts	141
Literature	144
Music	153
Musical Instruments	155

CHAPTER X

Social Grouping	158
The Local Group	162
Clans and Gentes	164
Dual Divisions	168
Relationship Systems	170
Taboos and Social Privileges	171
Age Grades and Societies	173
Totemic Features	174

CHAPTER XI

Social Regulation	177
Conceptions of Property and Inheritance	185
Marriage Regulations	187
Education and General Discipline	189

CHAPTER XII

Ritualistic Observances	193
Supernatural Guardians and Totemism	199
Shamanism	201
The Personal Relation in Ritualism	206

CHAPTER XIII

Mythology	208
Mythology and Religious Conceptions	213
Unity of New World Culture	217

CONTENTS

ix

CHAPTER XIV

	Page
The Classification of Social Groups according to their Cultures .	219
The Historic Tribes	220
North American Culture Areas	220
1. The Plains Area	220
2. Plateau Area	224
3. California Area	227
4. North Pacific Coast Area	229
5. Eskimo Area	231
6. Mackenzie Area	233
7. Eastern Woodland Area	236
8. Southeastern Area	239
9. Southwestern Area	241
10. The Nahua Area	244
South American Culture Areas	247
11. The Chibcha Area	247
12. The Inca Area	249
13. The Guanaco Area	251
14. Amazon Area	253
15. The Antilles	259
Culture Centers	260

CHAPTER XV

Archæological Classification	263
North America	263
1. The North Atlantic Area	263
2. South Atlantic Area	268
3. The Iroquoian Area	270
4. The Mississippi-Ohio Area	271
5. The Great Lake and Upper-Mississippi Area	274
6. The Plains	276
7. The Pueblo Area	278
8. California Area	281
9. The Columbia Basin	283
10. North Pacific Coast Area	284
11. The Arctic Area	284
12. The Canadian Area	285
13. Northern Mexico	285
14. Central Mexico	286
15. State of Oaxaca	286
16. Yucatan	287
17. Panama	287
18. The Antilles	289
South America	290
19. Colombia and Venezuela	290

	Page
20. Ecuador	292
21. Peru	293
22. Chile	294
23. The Atlantic Highlands	295
24. Patagonia	296
Archæological Areas	296

CHAPTER XVI

Chronology of Cultures	305
Stratigraphy	306
Direct Dating	308
Established Chronologies	310
Inferential Sequences	315
Historical Sequences	320
The Antiquity of Man in the New World	323
The Folsom Cultures	324
The Yuma Site	325
White River Sites in Nebraska and South Dakota	325
Man and the Ground Sloth	325
Alaska	326
General Comment	326
Summary	327

CHAPTER XVII

Linguistic Classification	331
Comparative Phonetics	336
Geographical Grouping	341
Distribution of Stocks	343

CHAPTER XVIII

Somatic Classification	347
Breadth of Face	349
Flattening of the Femur	350
The Teeth	350
Head Form	352
Orbits and Nasal Skeleton	356
Blood Groups	357
Bodily Proportions	358
Summary of Somatic Characters	358
Relations to Mankind in General	359
Grouping by Somatic Characters	370
Chronological Types	372
Summary	375

CONTENTS

xi

CHAPTER XIX

	Page
New World Origins	378

APPENDIX

Linguistic Tables and Bibliography	389
Linguistic Stocks of the United States and Canada	391
Linguistic Stocks of Mexico and Central America	400
Bibliography	405
Index	441

LIST OF ILLUSTRATIONS

Dog Dancer of the Plains	<i>Frontispiece</i>
1. Food Areas of the New World	2
2. The Habitat of the Musk-Ox and Caribou	4
3. The Distribution of Maize and Manioc	20
4. Pueblo Indian Planting Maize	22
5. Cultivating Maize and Squashes	22
6. Distribution of Coca and Tobacco	26
7. Distribution of Animal Transport	29
8. Eskimo Dog Sledge	33
9. Indians of the Bison Area on the March	33
10. Various Methods of Using the Tumpline	37
11. Types of Canoes	39
12. Ancient Mexican and Egyptian Spinners	46
13. Basketry Weaves	49
14. Distribution of Types of Basketry	51
15. Ojibway Weaving Frame	54
16. A Navajo Weaver	54
17. Distribution of Weaving	56
18. Cape of Sagebrush Bark	58
19. Types of Costume and their Distribution	61
20. Forms of Footwear	63
21. A Pueblo Indian Potter	67
22. Distribution of Pottery Making, 1600-1800	67
23. Lower Mississippi Pottery	69
24. South Atlantic Pottery	70
25. North Atlantic and Upper Mississippi Pottery	70
26. Pottery from Southwestern United States	71
27. Mexican Pottery	72
28. Central American Pottery	72
29. Peruvian Pottery	73
30. Pottery from Eastern South America	74
31. Types of Textile Design	78

	Page
32. Types of Prehistoric Peruvian Textile Designs	79
33. Decorative Design Areas	81
34. Beaded and Painted Designs	83
35. The Decorative Art of the Plains Indians	85
36. Design Elements	85
37. Decorations on Birchbark	88
38. Prehistoric Textile Designs, Maya	91
39. Mexican Textile Designs	92
40. A Series of Peruvian Designs	94
41. A Series of Designs and their Names	98
42. True Symbols	100
43. Cross-Section of the Temple of the Cross	103
44. Groundplan of the House of the Nuns	104
45. Elevations and Groundplans, Yucatan	105
46. Section of the Hall of the Six Columns, Mexico	107
47. Pebbles Showing the Process of Abrading	120
48. Pieces of Worked Nephrite	121
49. Common Types of Arrow-Head	123
50. Knives of Copper from the Eskimo and Inca	126
51. Methods of Drilling	133
52. Wooden Slat Armor	137
53. Two Figures from Palenque	142
54. Statues of the Chacmool Type	143
55. A Sculptured Turtle at Quirigua	143
56. Distribution of Sculpture	146
57. Distribution of Clans and Gentes	166
58. Culture Areas	221
59. The Plains Indian Culture Area	223
60. Distribution of Forests in South America	255
61. Archæological Areas	264
62. Types of Stone Implements, North Atlantic Area	265
63. Range of Pre-Algonkin and Old Algonkin Cultures	267
64. Iroquois Archæological Types	270
65. Folsom and Yuma Points	277
66. Proposed Sub-culture Areas in Southwestern United States	281
67. Ancient Maya Cities	288
68. Linguistic Stocks in the United States and Canada	334
69. Linguistic Stocks in Mexico and Central America	338
70. Linguistic Stocks in South America	340
71. Consolidation of California Stocks	342
72. North American Types	348
73. Brazilian Types	349
74. Patagonian Types	349
75. The Cephalic Index	353
76. Diagrammatic Representation of Average Bodily Forms	360

CONTENTS

xiii

Page

77. Bodily Forms from Various Races	361
78. Lines of Dispersion for the Primates	365
79. Living and Extinct Groups of Primates	365
80. Distribution of the Primary Divisions of Mankind	366
81. Dispersion of Mankind	368
82. North American Indian Tribes	466

INTRODUCTION

THE term anthropology now stands for the specific science of man. Ethnology, archæology, and somatology are merely divisions, or convenient groups of problems within the scope of this science. The ideal of anthropology is to coordinate all the data concerning man's culture, language and anatomy, past and present, with a view to solving the problems of his origin and the interpretation of his culture. To this end, it must employ the methods of history, zoology, psychology, geology, and the exact sciences, as the case may require. Its pursuit will prove no light task, but to him who has a grasp of some of these subjects and a working insight into the others, anthropology offers problems of the most enticing sort. Naturally, but few of us can hope to grapple first-hand with these great inquiries, but the anthropology of today has moved forward so far that no man who wishes to be considered well educated can afford to ignore its fundamentals any more than he can those of zoology or sociology.

This book, however, is not designed to serve as an introduction to anthropology in general. On the other hand, it deals with one of the two grand world divisions under which the subject matter of anthropology is comprehended, for as we shall see in the course of this discussion, the native culture of the American Indian stands out in sharp contrast to the culture of the Old World. This contrast is due to fundamental differences in the specific cultures of the two hemispheres, which differences naturally tend to form two groups of problems. Yet, the problems that arise in the anthropology of the New World have a great deal in common with those pertaining to the Old. The functions of culture seem

to be the same in each; hence, a review of the New World, such as we are now to take up, will at the same time introduce us to the methods and viewpoints of anthropology in general.

Yet, aside from these academic considerations, the American Indian makes an appeal to popular interest. The name occupies so large a place in our own culture that it may be doubted if there is anywhere in all the land a normal individual who has not acquired some interest in the Indian's history. On every hand we hear: How came the Indian here? Who were his ancestors? What knowledge and habits did he bring with him? What has he accomplished of his own initiative and how did he achieve it? And it is right and proper that every one of us should be interested in these questions, because we have not only displaced the Indian in this land but we have absorbed a great deal of his culture. For instance, what a void we should create if, by some magical power, we could strike from our history, geography and literature all that pertains to his race! Again, what havoc would be wrought by his withdrawal from painting, sculpture, and decorative art! But these losses, incalculably great as they are, would be lost in the overwhelming economic vacuity that would result from the obliteration of maize, cacao, manioc, the potato, the squash, coca, quinine, tobacco and all the other numerous and nameless contributions the Indian has made to our culture. From that eventful day in 1492 when Columbus first laid eyes upon the Indian, down to this very hour, he has been the most studied of peoples. No other race of the world can so stir the imagination of the European. It is thus plain that we have before us one of our greatest cultural assets, the source of the most original traits of our present-day culture and a heritage upon which we may realize more and more. It behooves us, therefore, to systematize and extend our knowledge of this vanishing race whose life has been tram-

pled under foot in the ruthless march of culture's evolution, but whose own cultural achievements were too virile and too finely adjusted to local geographical conditions to be obliterated.

Further, the chief concern of scientific anthropology is to solve the very questions of origin that actuate the popular mind. As applied to the New World, the sole objective of anthropology is to discover the origin and conditions which have produced the Indian and his culture. Such questions of origin look simple and innocent enough but, my dear Reader, here are problems whose final solution shall surely put the intellect of man and his scientific methods to a supreme test. Positive and complete answers can not now be given to any of these questions, yet anthropology has something definite to offer on every point, though so far, this information lies hidden from the uninitiated reader in the accumulated mass of published data and special literature. It is to make up in some measure for this deficiency that the following handbook of the subject is projected.

CHAPTER I

THE FOOD AREAS OF THE NEW WORLD

THE most tangible and objective of human traits are those having to do with food. It is obvious that the fundamental necessity for man's existence is a sufficient quantity of some kind of edible organic substance. Moreover, a retrospect of the world, as we find it today, suggests that one of the eternal problems confronting the several groups of mankind has been the discovery of practical methods for adapting living forms to dietary requirements. For this reason, if for no other, it seems advisable to begin our study of man in the New World with a general discussion of food complexes.

The almost universal tendency among the several groups of mankind is to specialize in some one kind of food which thereby becomes the staple, or main support, to be supplemented by secondary foods when opportunity permits. Even our own very complex culture has not fully overcome this disposition, as shown in our great dependence upon bread and beef. Another characteristic is that this specialization is uniformly distributed over a considerable area. Because of these two conditions our task of classification is far less difficult than if it were otherwise.

Guided by these considerations the New World may be comprehended under eight large food areas, the general boundaries of which are indicated on the map. Thus, beginning with North America, we have in the north a large extent of territory presenting Arctic and sub-Arctic characteristics. This region is the natural range of the caribou, or American reindeer, whose flesh was the main support of



Fig. 1. Food Areas of the New World

the aboriginal populations. On the Pacific slope, centering in the drainage of the Columbia River, we have the salmon area. To the south, in California and a portion of the interior, is the area of wild nuts and seeds. In the heart of the continent is the bison area. Eastern United States is embraced in the eastern maize area. Beginning at the Colorado River and extending down through the Isthmus and the Andean regions to the lower part of Chile, is the area of intensive agriculture in which maize is also the leading food. The interior of the southern continent, centering around the Amazon drainage, is, in the main, a dense tropical forest about whose native inhabitants we have the least knowledge of any. In fact, we cannot certainly characterize the food of the whole area, but inferring the whole from the known parts, we should say that small game and cultivated manioc are the important foods. Finally, the lower part of the continent has certain similarities to the North American caribou area, the chief food animal being the guanaco.

It will be observed that these eight areas can be grouped: three of them being the homes of hunting peoples, three of agriculturists, one of fishers, and one of gatherers of wild seeds.

HUNTING AREAS

In the caribou area live two groups of tribes generally recognized as having little in common, the Eskimo and the Canadian Indians. As we shall see later, this view as to their diversity is in a large measure justifiable, but with respect to food they have close similarities. It is customary to characterize the Eskimo as a people living upon sea mammals, particularly the seal; but we must not overlook the fact that their winter clothing is of caribou skin and that the flesh of that animal is an important part of their diet. However, the severe winters of their extreme northern

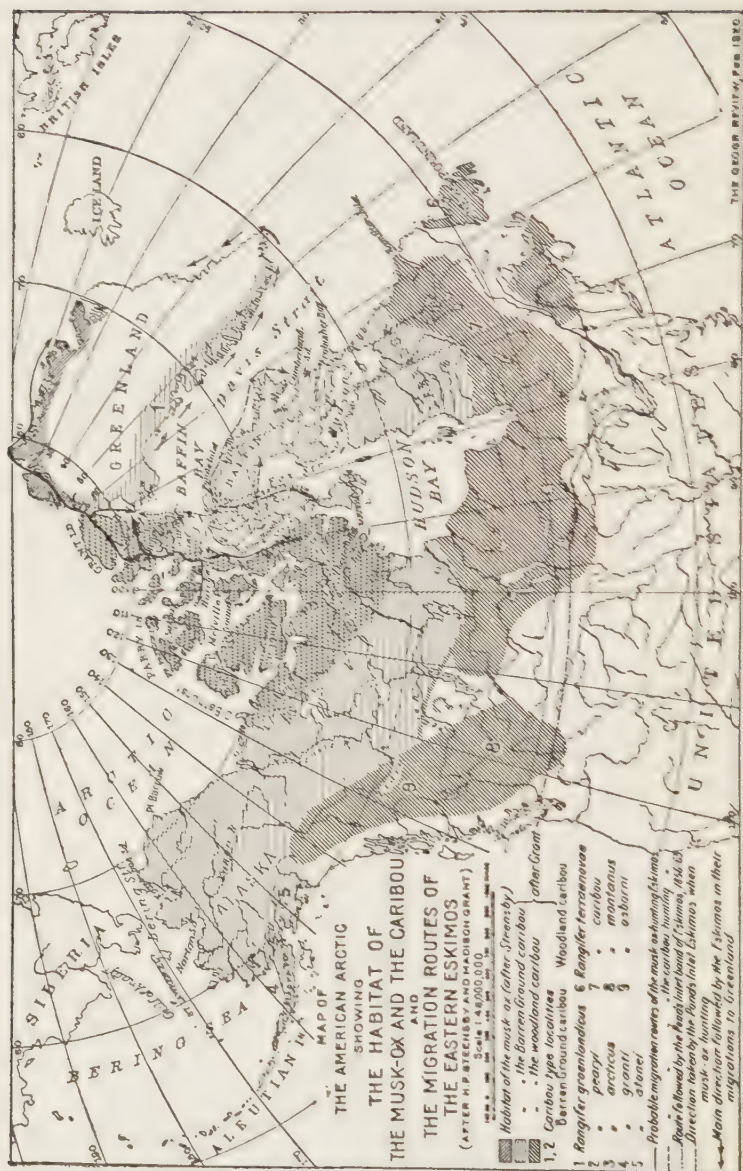


Fig. 2

range drive the caribou southward and leave the seal the only recourse during the period of prolonged darkness. Yet whenever the caribou are in reach the Eskimo places his chief dependence upon them. Thus, while our classification should not be permitted to obscure the large part that sea mammals play in the domestic economy of the Eskimo, the caribou is absolutely indispensable to his existence, not so much for food as for winter clothing. Hence, we see that Eskimo culture must be considered as a modified form of caribou culture.

The Indians of this area, chiefly the Déné and Northern Algonquin tribes, are an inland people occupying the sub-Arctic tundra and the sparse forest belt below it, which gradually shades off into the denser forests of southern Canada. Among these tribes we find the typical caribou culture. Vivid pictures of the prehistoric caribou hunting life have been penned by Hearne ¹ and its surviving form by Warburton Pike. ² In southern Canada the moose and other deer were also available and in the far north the musk-ox; wood bison were also found in a few localities, and hares and other small animals were eaten when needed. Though not reaching the seacoast at any place, these inland tribes had within their range lakes and rivers well stocked with fish, and in season frequented by water fowl. As with the Eskimo, these sources of supply were drawn upon in season. Yet all these foods were merely supplementary, for the people pinned their faith to the caribou and developed their whole feeding and clothing complex around this animal. Consequently the failure of the caribou in any locality for even one season alone would spell disaster.

The methods of hunting are fully described in the descriptive literature of the several tribes, but, as always, such methods are largely dictated by the habits of the animals themselves. Among both the Eskimo and the Indians, the method of killing caribou is to drive or stampede them into

artificial or natural lanes or defiles where the hunters are concealed. A variant of this is to run them into deep water, where they are at the mercy of swift canoe men. Snaring is also highly developed, even the largest game being caught in this way. Fishing of whatever kind is with three forms of appliances: the harpoon, the hook and line, and the net. These methods were both known to the Eskimo and to the Indian, though not used by both to the same relative degrees.

The cache is an important invention of this area and has found its way into our own culture. The name is usually applied to an elevated or a subterranean enclosure for storing dried or frozen meat. The caribou, living in great herds, must move forward as they graze over the almost barren tundra and the hunters must follow with equal speed. So the cache method was devised to solve the problem. The kill of the day is dressed as quickly as possible and then cached, after which the pursuit is again taken up. Thus, each family group will have a number of stores in various accessible places upon which they may draw in case of need.

The bison area is contiguous to the caribou area, but is of far less extent. It is also entirely inland, and like the upper portion of the caribou area, is comparatively treeless, except along the water courses and upon the higher ridges. The tribes formerly residing here are known to us as Buffalo Indians, and no characterization could be more exact. Along the foothills of the mountains, elk were formerly abundant and also mountain sheep, and out on the plain antelope were to be met, but these were obscured by the seething masses of bison, or buffalo encountered everywhere, summer or winter. Edible fish were not abundant, and some of the tribes observed a taboo against them as well as all water animals.

The methods of hunting bison bear certain analogies to those employed in the caribou area. Before horses were introduced, small herds were enticed or stampeded into en-

closures where they were shot down at will; at other times they were rounded up by systematic grass firing and while in compact formation attacked at close range by foot men.³ In favorable times, the surplus meat was dried and packed in bags.

This is a convenient place to note the manufacture of pemmican, a process which appears in some parts of the caribou area, but which seems to be more characteristic of this area. To make pemmican, the dried meat of the buffalo was pounded fine with stone hammers and packed in bags which were then sealed with melted fat. A special variety of pemmican was prepared by pulverizing wild cherries, pits and all, and mixing with the pounded meat. This is known in the literature as berry pemmican. There was also a variety in eastern Canada and New England made of deer and moose meat. When properly protected, pemmican will keep for many months and being compact and easily transported forms an exceedingly valuable food. From the very first it was adopted by Canadian and Arctic explorers among whom it is still the chief dependence.

In pemmican we have our first good example of the many ingenious processes by which the various groups of mankind have converted raw foods into more serviceable and conservable forms. In all cases, the chief consideration seems to have been its preservation and availability for transport.

The next great hunting area is in South America. From the interior of Argentina to the Horn we have in the main an open country, suggesting the central portion of the United States. There are few trees and in some parts, as the celebrated Pampas, there are rich, grassy plains. At the time of discovery (1492), the fauna here was not so rich as that of the northern continent. Yet the guanaco was abundant. This is considered to be the wild llama, a ruminant having close similarities to the camels of the Old World, but much

smaller. Another animal of economic importance was the rhea, or American ostrich. The early accounts suggest that the original human inhabitants of this area were a nomadic hunting people, primarily dependent upon the guanaco, which they pursued with the bolas and the bow. For this reason we shall speak of the region as the guanaco area. In the extreme southern part of the area, or lower Patagonia, we find a condition somewhat like that of the Eskimo, the tribes tending to live more on fish and seals, until we reach the Fuegians, who were almost entirely dependent upon marine fauna.

Spanish colonization soon made great changes in the guanaco area proper by the introduction of horses and cattle.* The latter soon ran wild in great herds like the buffalo of the northern continent, and the former not only ran wild, but were domesticated by the natives. Dobrichoffer* has given us most readable accounts of how completely these natives assimilated horse culture. Some of the Patagonians are still famous for their horsemanship.

Though it is true that in these three great hunting areas the main food was flesh, many vegetable products were used. Even in the Arctic the Eskimo gather berries and edible roots in summer. Throughout the caribou area proper, the berry crop is considerable, and judging from Morice's* account of the Carrier some tribes dried and pressed them into cakes for storage. Edible roots also played an important part. As we come southward into the bison area, the flora grows somewhat richer in wild fruits, such as the cherry, plum, strawberry, etc., while in the more arid portions, the prickly pear is abundant. Of roots there were several species, but particularly the prairie turnip (*tipsina*, in Dakota). Even in the guanaco area we find the *Araucaria imbricata*, a kind of pine tree growing along the eastern border of the Andes, bearing abundant nuts, not unlike

* Col. Church* states that horses were purposely turned into the Pampas in 1539.

chestnuts, which are eaten raw, boiled, or roasted. Here also the *algarroba*, or mesquite tree, abounds and from its seeds a food is prepared. In the treeless parts of Patagonia are the prickly pear and a few other scant food plants, while the pampas proper is devoid of all except a few edible grasses. On the other hand, the territory of the Fuegians is fairly well provided with berries which they use, but also produces wild celery and scurvy-grass, of which they make no use.

THE SALMON AREA

All the streams between San Francisco Bay, California, and Bering Straits, Alaska, draining into the Pacific, are visited by salmon. These ascend from the sea *en masse* to spawn, constituting a "run," in local speech. As they reach the very headwaters, they are available to all the tribes of this drainage, even those far inland. The run for each species of salmon occurs but once a year and this developed periodic seasonal practices not unlike those of agricultural peoples. As the time for the run approaches, the tribes gather upon the banks of the streams, equipped with fishing appliances, dip nets, harpoons, and weirs, as the local conditions may require. Then when the salmon pass, they are taken out in great numbers, to be dried and smoked. In the interior of the Columbia Basin, the dried fish are afterwards pounded fine in mortars, thus being reduced to a state not unlike pemmican. This pulverized food is carefully stored in baskets as the chief reserve food supply of the year. The tribes on the coast and outlying islands engage in sea fishing all the year and are almost entirely dependent upon the marine fauna, but those of the interior hunt deer and other game to complete their diet.

Of vegetable foods there are several varieties. Inland, several species of roots are gathered, dried and pounded fine in the same manner as dried fish. The chief root is camas

but there are several other species in general use. In their proper season, berries are also very numerous in certain localities.

One striking peculiarity of these inland people is the extent to which they pounded or pulverized dried flesh and vegetables quite like agricultural peoples treat forms of grain. The trait seems to be almost a conventionality and leads one to suspect that the idea was borrowed from their southern neighbors who, as we shall see, were in contact with grain grinders. The tribes of the coast, particularly the indented island-studded part north of Puget Sound, did not have this pulverizing habit, nor did they make very extensive use of roots. Dried fish and berries were their staples. Where available, a kind of clover was eaten green and the inner bark of the hemlock worked up into a kind of bread-like food.

While in this area the tribes of the coast maintained fairly permanent villages; those of the interior were rather nomadic, or more correctly, moved in an annual cycle, according to their food habits. Thus at the salmon run each group took its accustomed place on a river bank; then as berries ripened, they shifted to the localities where they were abundant; later they moved again for the gathering of roots; again for hunting deer, and so on in one ceaseless round. To a less extent this seasonal shifting prevailed among the coast tribes, for by the use of canoes they could readily reach the places sought and return again to their villages.

This correlation between the use of wild foods and instability of residence is perhaps more striking in this area than in the others but, nevertheless, holds for all. The Eskimo regularly shifted from sea to inland and back again as winter set in, likewise, the caribou, bison, and guanaco hunters, each in their respective habitats, shifted according to seasonal requirements. The more extended and definite annual cycle of the salmon area seems to be due to the fact

that each of their staple foods was available for but single short periods of the year, not unlike so many successive harvests of an agricultural people whose fields were far apart.

THE AREA OF WILD SEEDS

The area of wild seeds is often spoken of as the "acorn area," and will frequently be so designated in this work. However, it should be borne in mind that in southern California acorns are found only on the uplands and mountains and that in the surrounding parts and eastward over the Great Basin wild seeds take their place. Yet, since the most typical culture is found in central and southern California, we may consider the acorn the most characteristic food.

At the proper time acorns are stored in large basketry bins to protect them against thieving rodents. The raw acorns are not palatable, for they contain a large amount of tannic acid; however, this objection is eliminated by pounding the kernels into flour and then leeching with hot water. Good descriptions of this ingenious process may be read in the publications of the University of California. From this substance, a kind of bread or cake is made, which proves to be a very satisfactory food, but even here this is supplemented by foods from several varieties of wild seeds, roots, herbs, and grasses.⁷ The tribes on the eastern side of the mountains out on the arid plateaus are forced to get along without the acorn and in consequence eke out their living from but a scant flora. One peculiarity of the area is the rarity of berries and fruits, which is in contrast to the interior of the salmon area.

The term "digger," generally applied to the natives of this area, was suggested by their persistent gathering of roots and plants. It was also an expression of contempt due to the contrast between the scanty diet of these Indians and those of the bison area with whom travelers were more familiar. Likewise, the fauna was not particularly favor-

able. Deer were to be found in the mountains, but rarely in large numbers, and small game animals were not numerous. In the eastern part, the rabbit was an important item, and as noted above, salmon were caught wherever they made "runs," and other fish were used when available. Likewise, the coast people depended to some extent upon the marine fauna. Thus, notwithstanding the popular idea of modern California as an ideal habitat for us modern Americans, it must be regarded as rather unfavorable to the development of primitive tribes, for while enough food could be found, the daily routine of gathering it in small bits was time-consuming in the extreme. Moreover, in parts of Nevada, Utah, and Idaho the margin of even this sort of food was so narrow that many species of insects were eaten.

THE AGRICULTURAL AREAS

There are just two cultivated native food plants, maize and manioc (cassava), that rise to the level of chief staples. Both take the highest rank in excellence among the world's foods, and after the epoch-making discovery of Columbus were quickly spread to other parts of the world.⁸ The uniqueness of these plants and the sharp contrast they make when compared with the cultivated staples of the Old World, is the strongest possible argument for the independent development of American culture.

In the first place, we have a distinct agricultural area in the eastern half of the United States, including a very small section of Canada. The chief crop was maize, on which account we speak of this division as the eastern maize area. Although its contact with the great agricultural area of Mexico and the south is slightly broken in Texas, we have no reason to doubt a historical connection between the two areas, and consequently we may consider them as parts of the same whole. The remaining inland boundaries of this

eastern maize area mark the approximate climatic limits to its growth. These limits also define the distribution of agriculture, from which we have reason to infer that the introduction of that art did not precede the introduction of maize culture. However, this is a problem to be discussed later. We see, then, that the Indian tribes had extended agriculture in the east to its physical limits. The stretch of country from Louisiana to Maine presents considerable climatic variety which is reflected in the aboriginal crop lists, for though maize was grown throughout, it seems to have been more exclusively toward the north. Roughly considered, in the northern half of the area, the crops were squash, beans, and maize, all planted in the same field, while in the southern half, maize was supplemented by a kind of millet, and squashes gave way to melons, sweet potatoes, and gourds.

Tobacco, though not strictly a food, may be noted here. It was extensively grown in the south, and its cultivation carried as far north as the climate permitted.

Wild plants were also abundant and many species were used. Parker's ⁹ exhaustive study of Iroquois foods shows how completely that people drew upon the contiguous flora. From the data at hand, we have reason to believe that in the south a still greater number of species were eaten. In the far north wild rice became almost a staple; but while, as Jenks ¹⁰ has shown in his laudable investigation of this food, it was sometimes planted by the natives, it was not truly domesticated as was rice in the Old World.

Of manufactured foods, other than those made of maize, maple sugar takes first place. Practically every essential detail of the process now in use was developed by the Indians of this area before 1492. The sugar maple being a northern tree, the trait is almost peculiar to the northern half of the area, though the box elder and a few other trees have, in later times at least, permitted a makeshift exten-

sion of the art. That any kind of sugar was made in the south is doubtful.

Another food deserving mention is oil derived from hickory and walnuts. This oil was highly characteristic of the south and added a valuable element to the otherwise starchy diet. In early days the natives did a good business in supplying this oil to the colonists. In some parts of the Atlantic coast plain tuckahoe (a fungus) bread was made, and in the south, persimmon bread.

Of foods and dishes made with maize there is a long list, which is in the main the same as we ourselves use. Two noteworthy studies of this aspect of maize culture by Carr ¹¹ and Parker ¹² show how completely the white colonists absorbed the maize complex of the Indians.

One important characteristic of agriculture in this area is that it was woman's work, the man being a hunter. This sexual division of labor tended to give a well-balanced diet, but was not constant throughout, for in the far north where agriculture dwindled out into the caribou area, vegetable foods were decidedly in the minority, while in the extreme south, where agriculture was rather intense and the flora rich, the fruits of the chase were in the minority. The chief game was the deer. The bison of the prairies found its way as far east as the Alleghanies, but except in the open country was not an important item. The wild turkey and various small game were also abundant. Fish were taken where found by the usual methods, but in the south the use of poisons was general.

Next we turn to the great area of intensive agriculture, the only one in the New World, where work in the fields is not regarded as woman's work exclusively, and in which hunting ceases to be an occupation. As may be anticipated, it is also the home of the most advanced Indian cultures. We see from the map that it extends to about 35° on either side of the equator and is thus almost entirely within the

PLANTS CULTIVATED BY THE NATIVES OF THE
NEW WORLD BEFORE 1492

The following list enumerates the most important plants originally cultivated by the several Indian tribes before the discovery of the New World in 1492.

Name	Area of Cultivation
Agave, or aloe (<i>Agave americana</i> Linn.)	Mexico to Chile
Alligator pear (<i>Persea gratissima</i> Geartn. f.)	Central America and West Indies
Arrowroot (<i>Maranta arundinacea</i> Linn.)	Tropical America
Barnyard grass (<i>Echinochloa crusgalli</i> (L.) Beauv.)	Mexico and southern United States
Bean, kidney (<i>Phaseolus vulgaris</i> Linn.)	Distribution same as maize
Bean, Lima (<i>Phaseolus lunatus</i> L., var. <i>macrocarpus</i> Benth.)	Brazil and Peru
Cacao (<i>Theobroma cacao</i> Linn.)	Tropical America
Capsicum or Chili pepper (<i>Capsicum annum</i> Linn. and <i>Capsicum frutescens</i> Linn.)	Tropical America
Cashew nut (<i>Anacardium occidentale</i> Linn.)	Tropical America
Coca, or cocaine (<i>Erythroxylum coca</i> Lamarck)	Peru and Bolivia
Corn (See maize)	
Cotton (<i>Gossypium barbadense</i> Linn.)	Tropical America
Cherimoya (<i>Anona Cherimolia</i> Miller)	Peru and Brazil
Gourd (<i>Cucurbita pepo</i> var. <i>ovifera</i> Linn.)	Distribution same as maize
Guava (<i>Psidium guajava</i> Linn.)	Tropical America
Jerusalem artichoke (<i>Helianthus tuberosus</i> Linn.)	Mississippi Valley
Madia (<i>Madia sativa</i> Molina)	Chile
Maize (<i>Zea mays</i> Linn.)	See map (Fig. 3)
Manioc (<i>Manihot utilisissima</i> Pohl.)	See map (Fig. 3)
Maté or Paraguay tea (<i>Ilex paraguariensis</i> St. Hil. and <i>Ilex conocarpa</i> Reiss.)	Paraguay and western Brazil
Papaw (<i>Carica papaya</i> Linn.)	Brazil
Peanut (<i>Arachis hypogæa</i> Linn.)	West Indies and Central America
Pineapple (<i>Ananas sativus</i> Schult. f.)	Peru and Brazil
Potato (<i>Solanum tuberosum</i> Linn.)	Mexico and Central America
Prickly pear or Indian fig (<i>Opuntia ficus-indica</i> Mill.)	Chile and Peru
Pumpkin (<i>Cucurbita pepo</i> Linn.)	Mexico
Oca (<i>Oxalis tuberosa</i> Molina)	Temperate North America
(<i>Oxalis crenata</i> Jacq.)	Chile and Bolivia
Quinine (<i>Cinchona calisaya</i> Wedd.)	Chile and Bolivia
(<i>Cinchona officinalis</i> Linn.), and others	Bolivia and Peru
Quinoa (<i>Chenopodium quinoa</i> Willd.)	Bolivia and Peru
Squash (<i>Cucurbita maxima</i> Duchesne)	Colombia and Peru
Star apple (<i>Chrysophyllum cainito</i> Linn.)	Tropical America
Sweet potato (<i>Ipomoea batatas</i> Poir.)	West Indies and Panama
Tobacco (<i>Nicotiana tabacum</i> Linn.) and other species	Temperate America
Tomato (<i>Lycopersicum esculentum</i> Mill.)	See map (Fig. 6)
	Peru

torrid zone. On the other hand, all of this surface, except a narrow coast belt and a few intervening valleys, is the most elevated land in the New World. It is upon these highlands exclusively that maize was grown. Furthermore, there is a general tendency to aridity throughout, which, combined with the elevation, gives a very favorable climate. It is just the region where the most intensive cultures would be anticipated. As we proceed with the later sections of this book, the reader may be appalled at the complexity and variety of peoples in this area; hence it is fortunate that at the outset we are able to see one element of unity in the whole.

Beginning with the north, we have the pueblo-dwelling peoples of southwestern United States and northern Mexico. Besides maize, beans, melons, squashes and sunflower seed were the chief crops. In historic times, at least, onions and chili peppers were favorite garden plants; and according to local conditions, the following wild plants were largely used; piñon nut, mesquite, bean and saguaro. Tobacco and cotton were cultivated. Fish as food was not an important factor, in fact, it was under the ban of some tribes. Game was rather scarce, rabbits being the most numerous. Turkeys were domesticated. Of prepared foods, the most unique is the *piki* maize bread, made in thin, paper-like sheets.

For the remainder of the North American part of the area the Nahua and Maya may be taken as the types. Here agriculture was more highly organized than in any of the areas we have discussed. With the former, maize is made into peculiar cakes called "tortillas," which, with beans and the inevitable chili pepper, constitutes the usual menu. If we add to this cacao we have the list for the Maya also. In the lower parts, especially in Central America, there were many fruits, many of which are now cultivated by Europeans, as the *mammæ* apple, the alligator pear, the cashew

nut, together with the fleshy stalk of its tree, the tomato, pineapple, etc.

The Andean region of South America is peculiar in that at almost any point one may shift from high to low valleys, thus quickly passing through several varieties of climate. Likewise, one may, by lateral shifting, encounter deserts and the most well-watered stretches in succession. All this tends to nullify the effects of changing latitude, so that the aggregate agricultural conditions in Colombia, Ecuador and Peru can be made the same. Still we find some cultural differences.

The Chibcha peoples of Colombia in the highlands raised maize, potatoes, sweet potatoes, manioc, beans, tobacco, coca, and cotton. They did not have the llama, and game was scarce, but carefully protected and conserved. The other peoples of Colombia did more hunting, but in addition still cultivated maize. Salt was manufactured in favorable localities and formed an important article of trade.

The adjoining highlands of Venezuela formerly had a hunting and maize-growing population which was exterminated by the Spaniards.

Ecuador was partly under the control of the Inca at the Spanish conquest but, no doubt, still retained its former food habits. Its population was almost exclusively agricultural. Maize was the staple except on the highest levels, where quinoa was substituted. Potatoes were universal, and coca, peppers, and other plants in the lowest valleys. On the coast there was fishing.

To the south was the Inca empire with its highly organized agriculture. Here the crops were about the same as for Ecuador, but in favorable places manioc, ground nuts, beans, gourds, tomatoes, guava, and fiber plants were raised. Hunting was carried on in an organized manner, large drives being made over great areas. The game animals were chiefly the guanaco and vicuña, of which the flesh was often

dried and stored for the use of the army. The familiar term "jerked meat" is believed to have come from the *charqui*, as this dried meat was called in Peru. Birds were taken in nets, and on the coast there was some fishing.

The great basin of the Amazon with the adjoining coast is one of the world's most typical tropical areas, but almost everywhere throughout there was some native agriculture. As a whole, the area presents some geographical variety, for the eastern part of South America also has its highlands, though far less pretentious than those of the west. Here, however, the elevation was much less; consequently, maize did not become the chief cultivated food, manioc or cassava, taking its place. Otherwise, the range of plants was about the same as in the Andean region. Tobacco, potatoes, and cotton were common. The celebrated maté, or Paraguay tea, and the edible clay of the Botocudo peoples are the principal unique features. Yet, in no case were the tribes of these highlands so dependent upon agriculture as were those of the west coast. In this respect they present a close analogy to the eastern maize users of North America, with whom they are geographically connected by the West Indies. Further, the almost complete delegation of agricultural responsibilities to the women is in itself an indication of the large part hunting played in their sustenance.

Finally, we come to the interior of the continent where high temperature, low elevation, and abundant moisture combine to produce rank flora. Our knowledge of this area is still rather scant, but what information we have indicates that the whole interior Amazon Basin with the contiguous east coast noted above should be considered as one distinct food area. That the art of agriculture is now absolutely unknown to any of the Amazon tribes is doubtful, because far into the interior we find manioc, tobacco, coca, pumpkins, sweet potatoes, etc., growing in the village fields. Also, maize has been reported from a number of localities, though

the climate is unfavorable to it. The blowgun with poisoned darts is used in hunting, the game consisting largely of birds and small tree-climbing animals. No living thing is so abundant as to offer opportunity for food specialization, and the native must make use of everything he can lay hands upon. On the upper Amazon and elsewhere the taking of fish by poisoning the water is common. A very characteristic dish of this whole area is the "pepper-pot." Small game of whatever kind is cast into a pot and boiled into a thick broth made hot with peppers. The pot is not emptied, but the contents continually augmented.

GENERAL DISCUSSION

Now that we have gained a general perspective of New World food traits, we may note some of their most distinctive characteristics. It is clear that the art of agriculture centers around maize, for almost everywhere we find it grown. Its only rival is manioc, but, as we have seen, this plant is resorted to only in spots where it is too moist for maize. In the same way, the quinoa displaces it in the highest altitudes of the Andes. But this only serves to show how maize dominates aboriginal agriculture. We can be quite sure that if we knew the full history of this plant we should have a good insight into the development of the higher cultures of Mexico and Peru, yet in spite of its obvious importance, very little attention has been given to the subject. Though this homely art of maize culture is still practised by many surviving natives, the only field studies we have approaching a satisfactory standard are those of Parker¹³ for the Iroquois, Hough¹⁴ for the Hopi, and Wilson¹⁵ for the Hidatsa. For the Pueblo peoples who still raise maize in the aboriginal way we have little more than the pioneer work of Cushing.¹⁶ With respect to Mexico and the Andean region the literature is even more fragmentary. While



Fig. 3. The Distribution of Maize and Manioc

we do have a great deal of more or less generalized information, this has been re-stated so often that it is difficult to weigh it and even the very best of such literature can never take the place of exhaustive field studies. For example, it is only from the works of Parker¹⁷ and Wilson¹⁸ that we can form a definite conclusion as to how closely the cultivation of maize of white farmers follows aboriginal patterns.

However, the gross characteristics of aboriginal maize culture are clearly known. In the first place, no beasts of draught were employed, but all was by hand. Nowhere do we find a plowing machine drawn by men. As an independent proposition it may seem strange that the Peruvians, with all their genius, should have missed the idea of harnessing either men or llamas to a digging tool, but when we note that maize grows best in bunches or "hills," while the Old World inventors of the plow sowed grain broadcast, we find a partial explanation. The heaping up of earth around the growing plant is still one of the fundamentals in maize culture. It is a fair assumption that the hoe is an aboriginal solution of the practical problem involved here. The mere sowing of grain by the ancients of the Old World was the one great problem, for after that there was little to do until the harvest, while in the case of maize the tending of the crop was the most exacting. The former presents a much simpler mechanical problem than the latter; in fact, it is not until 1731 that we hear of a horse cultivator in England.

The aborigines dug up the ground with pointed and spade-like tools. From New Mexico to Chile, spade-like tools with foot-rests for thrusting into the ground were common, but in the eastern parts of both continents we find a simple digging-stick. In Peru the digging tools were sometimes pointed with copper and bronze.

The hoe was universal in the eastern maize area and seems



Fig. 4. Pueblo Indian Planting Maize



Fig. 5. Cultivating Maize and Squashes with a Bone Hoe. Hidatsa Indians

to have extended into the West Indies, but from New Mexico southward it does not appear in our collections. The significance of this is not yet clear. The data for the eastern maize area show us that the agricultural pattern was to hoe up hills around the plants. As stated before, maize, squashes and beans were often put in the same hill. Tobacco was planted in hills and so were the sweet potatoes of the south. The first Atlantic colonists adopted the hoe pattern of the native, especially in the south, where to some extent it still survives.

Artificial fertilization was practised from Nova Scotia to Chile. One method, widely distributed in both continents, was the placing of fish in the maize hill. Manures, both human and animal, were used in parts of the area of intensive agriculture. So particular a correspondence as planting with fish, reported for localities between New England and Peru, points clearly to a common origin, but it is the study of the maize plant itself that affords the strongest argument for diffusion from one center. The investigations of Harshberger¹⁹ and Collins²⁰ indicate that maize was developed from a wild grass of the Maya habitat. The distribution from this center of varieties once so developed would readily account for the uniformity of maize culture we have noted. Unfortunately, no careful study of the aboriginal varieties of maize has been made, but the data at hand suggest that about all the distinct kinds we still have on our farms were in existence by 1492 and that they existed side by side in the same fields. The time required to stabilize all these forms and the subsequent precision of domestic routine that preserved their racial integrity to the present among some of the surviving natives, is one of the most impressive facts of our subject. In 1919 the discovery of a fossilized ear of corn was reported from Cuzco, Peru. If true this would have changed the history of maize and agriculture, but in 1934 Roland W. Brown²¹ announced that

the supposed fossil ear of maize was a finely modeled piece of prehistoric ceramics.

So brief a review as this must needs pass over in silence many interesting points, but we should give passing notice to the evidence for the local adaptation of these widely distributed varieties of maize. It has been shown that the Hidatsa of the upper Missouri have trained certain varieties to ripen early and within the limits of the short season,²² a characteristic the maize of our eastern farms does not manifest. Collins²³ makes clear that the Pueblo tribes of New Mexico and Arizona have developed varieties with long, deep-growing root habits to reach the moisture in their very arid fields. These are, no doubt, but suggestions of many other adaptations awaiting discovery and which present very interesting chronological problems. Yet, even as the case stands, we must assume a long period of time to have elapsed since the initial propagation of maize.

The art of irrigation was known from Arizona to Chile, and in Peru was carried out on a scale scarcely equalled by modern nations. The remains of aqueduct systems in the Andes show such genius and organization that our respect for the native American rises to a high point.

The alternate of maize, cassava or manioc, deserves special consideration. Though requiring a more tropical habitat than maize, it also requires a fairly dry, sandy soil. At the period of discovery it was found in the West Indies, Central America, and even in Florida. The poisonous nature of the juice leads to a mode of preparation described fully in the special literature.²⁴ The essential procedure is to grate the pulpy parts and squeeze them in a basketry press called a *tipiti*. The pulp is then made into cakes and heated to drive out the remaining volatile poison, finally giving cassava bread, which is a staple food.

If we now take a general view of the data at hand it appears a fair assumption that the prevailing type of agricul-

ture was developed by a centrally located highland people and thence diffused, without essential modification, both to the north and to the south. While the experience of modern farmers indicates that the maize area of the Indians could have been extended somewhat, it is doubtful if this were possible without fundamental changes in the technique of maize culture and in social organization. In other words, maize culture did expand outward from the central region on a primitive level, the hunting tribes of both the north and the south borrowing the trait one after the other, so far as their habitat permitted.

DISTRIBUTION OF NARCOTICS

In connection with this discussion of cultivated plants some note should be made of aboriginal narcotics. The best known are tobacco and coca, both extensively cultivated in aboriginal times, as shown on the distribution map (Fig. 6). The narcotic element in coca is cocaine, a modern derivative. The native, however, simply chewed the dried leaves mixed with lime or other alkalis. Such coca chewing still prevails in the area indicated on the map and has spread to the natives of other parts of both continents, as well as to the whites themselves.

As will be noted, the chewing of tobacco is found in South America contiguous to the coca-chewing area, but it also occurs on the Pacific Coast of America.²⁵ One peculiarity of the latter habit is that the tobacco is taken with pulverized shells or ashes, ground fine in mortars; in other words, after the coca method. The appearance of this trait in these two disconnected areas and its analogy to the betel nut culture of Melanesia and southeastern Asia is truly puzzling.

The taking of snuff is also largely correlated with chewing, since we find it in both the chewing areas, though it extended rather well over the Amazon country and even to



Fig. 6. Distribution of Coca and Tobacco

the West Indies. However, the usual substance for making snuff powder is said to be the *Acacia niopo* berry. Along with the chewing of tobacco go various forms of its eating, drinking, licking, etc.

Yet, the most widely distributed method of using tobacco was smoking, of which three aboriginal forms can be localized. First, we have the true pipe found in the greater part of the United States and Canada and in the lower Atlantic side of South America; secondly, the cigar in the West Indies and the greater part of the Amazon country; and lastly, the tubular pipe in western United States, Mexico, and Central America. The usual form of this last is a small section of cane stuffed with crushed tobacco to which the name cigarette is applied. These methods of smoking are not so exclusively localized as the map would imply, but grade one into the other.

The map indicates the approximate extent of smoking in 1492, but as we all know, the custom was quickly carried to all parts of the world, both savage and civilized. The Asiatic peoples have a distinct type of pipe and a different method of smoking, which in late times has reached the Eskimo of Alaska from Siberia.

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| 1. Hearne, 1795. I. | 14. Hough, 1915. I. |
| 2. Pike, 1892. I. | 15. Wilson, G. L., 1917. I. |
| 3. Allen, 1876. I. | 16. Cushing, 1884. I; 1920. I. |
| 4. Dobrizhoffer, 1822. I. | 17. Parker, 1910. I. |
| 5. Morice, 1906. I. | 18. Wilson, G. L., 1917. I. |
| 6. Church, 1912. I. | 19. Harshberger, 1893. I. |
| 7. Merriam, C. Hart, 1905. I. | 20. Collins, 1914. I. |
| 8. Laufer, 1907. I; Spinden, 1917.
I; Sauer, 1936. I. | 21. Brown, 1934. I. |
| 9. Parker, 1910. I; Waugh, 1916.
I. | 22. Wilson, L., and Atkinson, M.,
1915. I; Will and Hyde, 1917.
I. |
| 10. Jenks, 1900. I; Densmore, 1928.
I. | 23. Collins, 1914. I. |
| 11. Carr, 1896. I. | 24. Im Thurn, 1883. I. |
| 12. Parker, 1910. I. | 25. McGuire, 1899. I; Krause,
1885. I. |
| 13. Parker, 1910. I. | |

CHAPTER II

DOMESTICATION OF ANIMALS AND METHODS OF TRANSPORTATION

THE domestication of animals and methods of transportation may be treated as a single division of our subject, because from the standpoint of Old World culture, one of these concepts calls the other promptly to mind, and even in aboriginal America there is found some relation between the two. The most common domesticated animals were the dog, the llama, and the related alpaca. With the exception of the guinea pig in Peru there were no others. It is true that we have on record instances of individual animals of other species being tamed, but in no case were they propagated.

Of birds, we have the turkey of Mexico and the Pueblo tribes of the United States. Lawson¹ is responsible for the statement that in Carolina cranes were bred in captivity, while, according to Roger Williams, the Narragansett trained hawks to guard their fields. But all these are exceptional cases. Also, eagles and serpents were sometimes confined for ceremonial reasons, but not truly domesticated. The bee was domesticated in Mexico by the Aztec and the Maya, as is still the case among some groups of natives in Central America and northwest Brazil.

The dog appears in Paleolithic Europe in close association with the remains of man and was practically universal in aboriginal America. Thus, the history of its development and dispersion over the earth would in a large measure be the history of man's cultural achievements. So it is quite

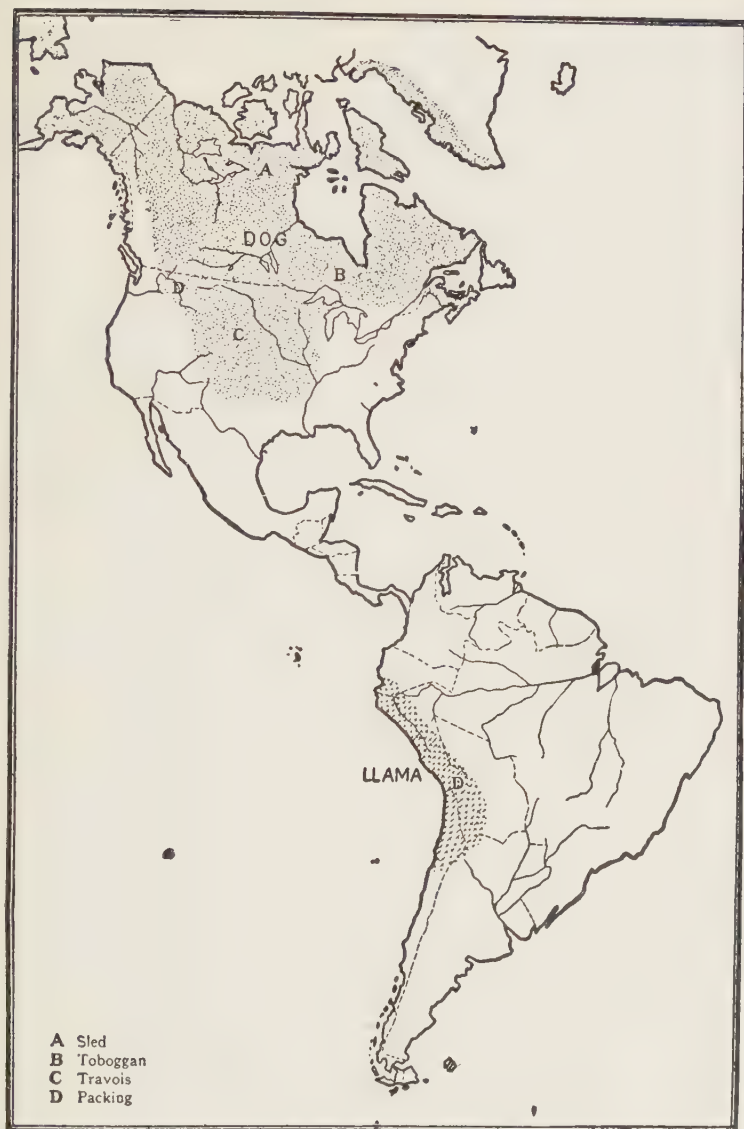


Fig. 7. Distribution of Animal Transport

natural that we have a large body of literature on the dog. Unfortunately, this is largely speculative, whereas what we need for our discussion is actual investigation. However, a recent study of the New World dog, by Allen, seems to prove that the dogs of both the Old and the New Worlds had a common origin, with their center of dispersion in Asia.²

The available data indicate that in the New World dogs served at least four purposes: transportation, hunting, guarding and companionship, or food, according to locality. They varied greatly in size and form, from the small, pug-like type found in Peru and the hairless variety of the tropics, to the great hairy beasts reared in some parts of the Arctic. Since it is certain that all dogs will readily cross with wolves and foxes and yet tend to remain fertile, the preservation of these types must have required some selective breeding. The only definite study of native dog culture so far made is that of Wilson³ for the Hidatsa (Siouan) which reveals a complex not inferior to that for agriculture. The Peruvians are credited with three distinct varieties of dog, the contemporaneousness of which necessitates our assuming the existence of breeding control similar to that exercised by us. However, since the methods of propagation are unknown, except for a few northern localities, a comparative discussion of the subject is out of the question.

Dog transportation, on the other hand, has received careful consideration. The most striking characteristic is its limited distribution, for, notwithstanding that the dog occurs everywhere, its use in transportation is confined to the caribou and bison areas with very narrow fringes in those adjoining. Above the forest line dogs were made to draw sledges, a trait quite characteristic of the Eskimo, but found among the most northern Indians of Canada as well. These sledges have straight parallel runners and do not differ essentially from our own simple farm types. There are dif-

ferent methods of harnessing, but for the most part the dogs are hitched by long single traces and run somewhat fan-shaped with the leader at the apex. Excellent descriptions are given in Arctic books of travel.⁴

In all the wooded parts of the caribou area a toboggan is used, the snow being rather too soft for sledges. This is also the great snowshoe area. While dogs were used to drag these toboggans, the hunters themselves not infrequently drew them. The early development of the Canadian fur trade by the Hudson's Bay and French companies greatly stimulated dog traction and greatly increased the use of sledges where ice conditions permitted. The former southern limits of the toboggan are not certainly known but it seemed to end with the Ojibway and Iroquois, though it may have been used along the upper Missouri.⁵

In the spring and summer dogs were made to bear packs and drag tent poles.⁶ This method was more widely distributed than the use of sledges and toboggans, covering the entire caribou and bison areas and extending somewhat into the inland portion of the salmon area. In the bison area, particularly in the northern part, we find an original contrivance, known to us as a travois. Though of two or three varieties, the essential structure is the same throughout—a V-shaped frame with an intervening section of net or wood upon which the load is placed.⁷ The structure suggests that this travois is merely a development of the pack and trailing tent poles, the more widely distributed method.

It may be worth noting that dog packing in particular is a concomitant of those hunting tribes following a regular migratory circle. The excursions of the Eskimo to the caribou ranges, the corresponding shifts of the Canadian Indians, and the bison-hunting expeditions of the Plains were in pre-Columbian days facilitated by pack trains of dogs. The intrusion of this method into the inland salmon area is consistent with the journeys then made to gather

food, as we have stated. On the contrary, topographical conditions in California made large movements unnecessary, which may be one reason why dog packing was not adopted. The maize areas were more independent and had little use for this trait. So far as we know, dog transportation was not in vogue in the area of intensive maize culture. Mexico and the Pueblo area had no way of land transport except by human carriers, and it is not until Peru is reached that the use of the llama comes to notice. This small, camel-like animal has little more carrying power than a large dog, but is particularly well adapted to mountain travel. For the remainder of South America our information is vague, but so far there is no reason to believe that the dog or any other animal was used for transport.

All this suggests that dog traction was intrusive to the New World. When we recall that in Europe and Asia the dog and reindeer are used to draw sledges and that the trait is continuous from Scandinavia to Greenland, this assumption seems justified. Yet, the problem is far from simple. The situation in the Old World is complicated by the presence of horse culture which appears as an early development and by the domestication of the reindeer. Either or both could have greatly stimulated dog traction, but on the other hand, dog traction could have developed in America and spread into Siberia. That it came in with the earliest Asiatic settlers is improbable, since in that case, though not necessarily, we should expect to find it surviving in southern South America. It is also true that the method of hitching in America is different from that in Siberia and contiguous parts of Alaska, and that nothing like the travois is found there.

Returning to our subject, we see that the prevailing mode of land transport in the New World was by human carrier. The wheel was unknown in pre-Columbian times. The wild fauna afforded nothing like the horse and ox of the Old



Fig. 8. Eskimo Dog Sledge



Fig. 9. Indians of the Bison Area on the March, Using the Dog Travois

World. The caribou has been found far less suitable for domestication than the closely allied reindeer, and the bison has proved itself rather too strenuous. Yet, these are not sufficient excuses. The plain fact is that the tribes in contact with these animals were relatively primitive. It is fair to assume that if the bison and the caribou had been available to the Peruvians, the tale would be different.

Before the time of Columbus, no tribe had an animal able to carry a man. The dog packers walked in front of their trains, and even the Eskimo walked more than they rode. The coming of the Spaniards made quick changes. The mule and donkey were soon in general use in the area of intense maize culture, though they have not yet entirely displaced the llama in Peru. Wild cattle soon over-ran Texas and southern California and in the Pampas became almost as numerous as the bison in the north. Their presence greatly modified the food supply, but the most far-reaching change resulted from the spread of the horse.

By direct instruction or mere self-initiated imitation, the natives of the bison and guanaco areas acquired horse culture. Unfortunately, the history of this cultural acquisition is lost, but we know that the use of the horse spread much faster than exploration, so that in many cases our first actual view of a tribe is as a horse user. The bison in the north and the guanaco in the south, supplanted later by wild cattle, presented almost parallel environments. In Europe at the time of Columbus, the horse was used almost exclusively by soldiers and aristocrats as a riding animal, mules for packing and bearing the common folk, while carts and plows were drawn by oxen. This horse-riding complex was thus readily adaptable to the native culture of these two areas. At least they seem to have taken it over as a whole, for saddles and other riding appliances are of the same European patterns both south and north.⁸

The important differences between the horse cultures of

the two areas appear in the adaptations made to the original cultures. Thus, in the bison area the horse was also used with an enlarged dog travois and in some cases seems to have been so used before the art of riding was acquired. The native names of mysterious-dog, elk-dog, etc., indicate the apperceptive attitude in the northern continent. In South America there was nothing like this, but a unique weapon known as the bolas was peculiarly adapted to mounted use. It is believed that this weapon soon entirely displaced the bow and quickly led to the invention of the lasso and its use by all Spanish ranchers north and south. In the bison area the bow was essential for killing buffalo even from horseback. In the Pampas a long lance became the other chief weapon, and though this and the lasso appeared among the Comanche on the southern borders of the bison area, they did not prevail among the other tribes of the north.

The use of the horse spread somewhat from these two continental centers. In the more open parts of the eastern maize area horses were common, but nowhere here except possibly in the Gulf States did they rise to a military level. In the greater part of California they were never used, but in some parts of the inland salmon area they rose to the importance attained in the bison area. The greater part of the caribou area was too cold for the horse.

The military and commercial necessities of Peru were met by caravans of llamas but even then human carriers were in general use. How the large stones found in some of the ruins of that country were transported is not known, but it must have been by human traction alone. Northward from Ecuador to the Colorado River there is no evidence of anything but human carriage. Tribute was brought to Mexico City by brigades of carriers. Chairs and litters for the transportation of people were used throughout the area of intense culture, and to some extent in the Gulf regions of the United States. In all areas there were special appliances

for holding the pack upon the back. While only the lightest loads were carried upon the head, in contrast to the African negro way, a widespread method was to support the pack by a strap over the forehead, one form of which is now known as a "tumpline." Perhaps the most unique appliance is the *kia* of the Pima tribes in Arizona.⁹ (Fig. 10.)

Before proceeding with our subject we may consider the extent to which animals were domesticated for food. The only place where a pastoral culture was noted is again in Peru. The Spaniards found the llama in great domesticated herds, sometimes reaching the thousands. In addition to their use in transportation, they were slaughtered for their flesh and sheared for their wool. The alpaca was also herded for its superior wool. The use of milk seems to have been unknown here as well as in other parts of the New World. In fact, the Indians as a whole seem to be as deeply prejudiced against milk as the Chinese,¹⁰ for it is with the greatest difficulty that our reservation tribes can be led to care for milk cows. The Spanish Americans seem to have been influenced by this also, for though great ranches were maintained it was seldom that a single animal was milked. This is still shown in our western states where cattle raising was derived from Mexico and gives us a fine illustration of culture diffusion.

Dogs were used as foods, but not everywhere. The Spanish colonists found them in general use in Mexico, and in the West Indies the first discoverers found a small edible dog. In North America, dog flesh was eaten in parts of the bison area, chiefly among the Siouan tribes. On the other hand, many tribes, even of the same stock, are as averse to its use as are the whites. Since here the local distribution of the custom is geographical and is associated to some extent with certain ceremonies, its occurrence may be sporadic,¹¹ for the general tendency north of Mexico is to regard the dog as not proper food.



Alaska



Arizona



Mexico



Chile

Fig. 10. Various Methods of Using the Tumpline. Mason, 1896. I

Turkeys were raised for their feathers and eggs by the Pueblo and Mexican peoples. According to some authorities the latter domesticated geese also. Turkeys were wild in some parts of South America in pre-Columbian times, but seem never to have been tamed. As to the tribes of the lower Mississippi, we cannot be certain, for some of them got chickens so early that the first French settlers in Louisiana found them raised everywhere.¹² They also had orchards of European fruits and raised hogs, while many others ran wild. The natives of Cuba, however, are credited with having domestic fowls and with stocking fish ponds when first discovered. The sheep, and to some extent the goat, was introduced into the great maize area and later developed the chief material characteristics of the Navajo tribe. The domestication of the bee for its honey has been noted above.

CANOES AND NAVIGATION

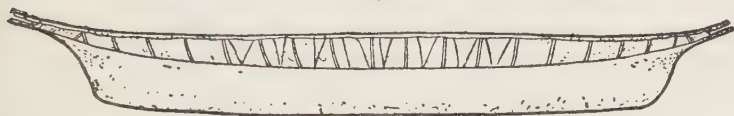
We come now to the second form of transportation and the one which is not in any way associated with the domestication of animals. It is strictly a mechanical affair from which the modern science of navigation has evolved. Somewhat in contrast to the Old World, the New has no great insular regions except that of the West Indies. The other favorable island group is on the Pacific Coast north of the Columbia River. The only other one in ice-free waters is on the lower west coast of South America. In the region of high culture the coast line is very regular and the inland waters very shallow. South America has one great central river system but no lakes. On the other hand, North America has a large river and lake area with many portages. So far as can be seen, boats were in use wherever advantageous, and from this point of view may be considered universal. Boats were made according to the materials at hand.¹³ In regions of large trees the dug-out was preferred, but in the



a



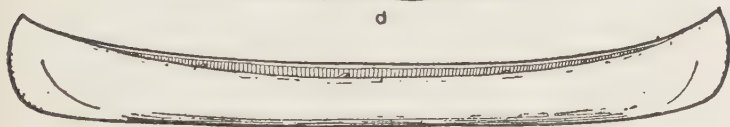
b.



c



d



e



f



g



h

Fig. 11. Types of Canoes Used in the New World. a, The "Bull Boat," Bison Area; b, Eskimo Kayak; c, Eskimo Woman's Boat; d, Balsa, or Reed Boat; e, Birchbark Canoe; f, Fuegian Bark Canoe; g, North Pacific Coast Dug-Out; h, Amazon Dug-Out

far North, the extreme South and parts of the Amazon country and the lake region of North America, we find frame boats covered with skins or bark. The crudest are the bark boats of the Fuegians; the finest are the birchbark canoes of the Ojibway and the kayaks of the Eskimo. From Central California to Chile we have occasional occurrences of the balsa type, a raft-like structure of reeds.

If we except the Eskimo, rowlocks were not used, the method of propulsion for small boats being to paddle first on one side and then on the other. The double paddle is found only among the Eskimo. (Yet it was reported by Frezier in 1717 as being used in the insular region of Chile with a boat combining some of the features of the balsa and the kayak.¹⁴) Even the great dug-outs of the North Pacific Coast were propelled by paddles. The use of sails is somewhat in doubt, but it is asserted that the Spaniards found them in Peru with balsas large enough to carry fifty men. Sails are used on the North Pacific Coast, but whether known before the era of Russian trade is not clear. The Eskimo use both the rowlock and sails, but as these occur on the Siberian coast, they are most likely intrusive. From the same source may have come sails on the west coast. Large canoes are mentioned for the West Indies, but no sails are spoken of until later, so that we cannot be sure of their original use there.

The only boat with hull built up of planks was that of the now extinct Santa Barbara of California. Another unique form was the circular tub-like boat with a skin-covered frame, used to ford rivers in the widely separated bison and guanaco areas, and one on the lower Colorado River made of basketry, Spanish name *coritas*.

The two regions in which an approach was made to a sea-faring culture were the North Pacific Coast and the Antilles. The great war dug-outs of the former with their carved prows remind one of old Norse models. The latter

region was overrun in succession by two races of canoe men, both apparently war-like, the Arawak and the Carib. Of these only the latter have any just claim to long voyages. In summer, the use of boats by the Eskimo was a prominent feature, especially in Alaska, where voyages of trade to Siberia seem to have been made.

An interesting problem lies in the distribution of specific variations in boats. Little has been done in this connection, except by students of the Eskimo, who, by careful and detailed comparison, have come to definite conclusions as to the origin of the kayak.¹⁵ Opinion seems to credit the invention of the kayak to Eskimo living around Hudson Bay. Finally, a study of boats for the Pacific Coast area concludes that the simple dug-out is the older form for the area as a whole.¹⁶ These are merely suggestions of important problems that await investigation.

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| 2. Allen, G. M., 1920. I. | 10. Laufer, 1914. I. |
| 3. Wilson, G. L., 1924. I. | 11. Wissler, 1910. I. |
| 4. Boas, 1888. I; Stefánsson, 1914. I; 1919. I. | 12. Swanton, 1911. I. |
| 5. Maximilian, 1843. I. | 13. Mason, 1901. I; Friederici, 1907. I. |
| 6. Stefánsson, 1914. I; Hearne, 1795. I. | 14. Frezier, 1717. I, p. 120. |
| 7. Wissler, 1910. I. | 15. Boas, 1888. I; Birket-Smith, 1929. I. |
| 8. Wissler, 1915. I. | 16. Waterman and Coffin, 1920. I. |

CHAPTER III

THE TEXTILE ARTS

THE subject now before us is far less intelligible to the layman than any of the preceding, chiefly because it deals with definite processes or crafts which must be mastered to be thoroughly understood. This cannot be expected even of professional anthropologists, who must necessarily be guided by the statements of textile experts. With such guidance we may, however, safely proceed to a general view of the subject.

There seem to be but four classes of textile fiber in general use: wool, bast, cotton, and silk. Of these, aboriginal America used all but the last. The sheep was not found here, but the hair of the Rocky Mountain goat was used in western Canada and also that of a dog bred for that purpose. In the bison area, particularly on the lower Mississippi, buffalo hair was spun. Mexico and Central America seem not to have used wool of any kind, no doubt because it was not available. The same may be said of Colombia and parts of Ecuador. As soon, however, as the range of the llama, vicuña and alpaca is reached, their respective wools come into use. Some archæological data indicate that at one time their use extended far down into Chile and out into Argentina.

Of bast fibers we have a respectable list. Even as far north as the caribou area willow bark was used. On the Pacific coast of Canada cedarbark fiber, and inland in the salmon area sagebrush bark were used, extending far down among the Shoshonean tribes of the United States. In California a number of plants were used for string twist-

ing. In the bison area practically no bark fiber was used, but about the Great Lakes and eastward, basswood or linn bark was largely employed. Occasionally, cornhusk fiber was utilized. In southeastern United States, particularly on the lower Mississippi, the fibers of Indian hemp and pemmenaw grass were extensively used. In Arizona and New Mexico we find the maguey, extending down into Peru. In the remaining parts of South America there are a number of bast fibers in use. Thus, we may conclude that the use of bast fibers was general except among the highly specialized hunting peoples of the extreme north and south.

Cotton, though a vegetable fiber, is a wool rather than a bast. Fiber experts claim that it is only the cultivated varieties that can be successfully spun. Proceeding from north to south we first encounter cotton in the Pueblo area of the United States. That it was grown in what is now the great cotton belt of the United States is improbable, but from the Pueblo country down through Mexico to Peru, cotton was the great textile fiber. The known varieties were white and brown. In other parts of South America and the Antilles a little cotton was grown, chiefly to be used in making hammocks.

Taking a general view of the preceding facts, we note that the distribution of cotton culture is in the main coincident with the regions of higher culture; at least, it is not found among non-agricultural peoples. Wool fibers appear in three disconnected regions: around Peru, British Columbia, and the lower Mississippi. Bast fiber, on the other hand, is practically universal, but shows decided specialization in the several food areas.

One other class of fiber not generally recognized by us is sinew, or tendon. Among the Eskimo and the Indians of Canada it is of the greatest importance and also holds a high place in the bison area, the salmon area, and the

northern part of the eastern maize area. In fact, wherever skin clothing is made, we find sinew in use, even in the guanaco area of South America.

SPINNING

The twisting of fiber into thread is the prerequisite of the whole textile art. Its distribution over the world is as universal as the use of fire and its origin probably fully as remote. Though there is but one way to do it, twist the fibers one upon the other, the appliances vary considerably. The primitive way, and no doubt the first historically, is solely by hand. A more mechanical way is to give the twist by a spindle bearing a whorl.

Our first problem is to distinguish the different methods of spinning and state their respective distributions. In this we must proceed with hesitancy because of inadequate data, but since very little native spinning survives there is no ground for expecting important additions to our field observations. The subject is, therefore, ready for such comparative study as can be made. We have neither the time nor the special knowledge to do this now, but will discuss the most obvious points.

One of the most direct approaches is the distribution of the spindle whorl. Its known occurrence in North America is in the highlands from Panama to the Colorado River. Then with a break in continuity we find it in British Columbia and on the adjoining coast. The only other place where there is even a suspicion of its use is the lower Mississippi. This conjecture is based upon the bare mention of an improvised affair, a wad of clay upon a stick, by an early writer.¹

Archæological data are on the whole consistent with the foregoing facts, from which their general finality may be assumed. Pre-Columbian sites yielding undoubted spindle whorls must be our safest criteria, because we lack definite

knowledge as to the exact state of spinning before white contact, and it is conceivable that the use of the European whorl could have been introduced quickly, as we have already noted in the case of the horse. Peru presents a puzzling case, for notwithstanding the high development of the art, the early historical data indicate the absence of a true whorl,² and objects of this nature are seldom found in excavating. However, in the northern part of the Andean region, pottery objects resembling whorls are frequent. We may suspect therefore that our data from Peru are incomplete. In other parts of South America they are rare, but the modern natives use them. So, in general, if we try to correlate the distribution of the whorl with that for fibers, we note that it is wanting in the distinctively bast and sinew areas. Where cotton, wool or both together are spun, we find the whorl, unless Peru should prove to be an exception.

Outside of the whorl area we have defined, bast and sinew thread are given the final twist by rolling under the palm of the hand, usually upon the bare thigh or calf of the leg. (The peculiar slit skirt of the Algonkin and Iroquois is regarded as a hand spinner's costume by Parker.³) A twisting appliance has, however, been noted for the Eskimo.⁴

But to return to our subject. The methods of preparing fibers for spinning differ with the materials, but after they are separated and cleaned, all must be carded, or extended in the same direction. No aboriginal appliance for this has come to light, but with the introduction of the sheep, the European card was also introduced and has been in use ever since. The difference between hand and whorl-twisting is merely a matter of machinery. In either case, the native first arranges the roving by hand. The only twisting machine in use for true textile fibers was the whorled or rolled spindle, but there was nothing like the wheel of the Old World. Further, we are told that it is only

bast fiber that can be twisted by rolling under the palm upon the thigh. Neither cotton nor wool can be economically handled that way because of the shortness and other characteristics of the fiber. In this case, the fiber must be made into a roving and then twisted from each end under the necessary draft, or tension. Thus, in the New World,



Fig. 12. Ancient Mexican and Egyptian Drawings of Spinners. The first shows the prevailing New World method. There is some doubt as to what part of the process is represented in the Egyptian figure, but the draft, or tension, is supplied according to the Old World method

we find that wherever cotton or wool are spun, a stick or spindle is used to facilitate the twist and to wind the finished thread. In Europe, spinning was by the whorl and distaff method; the spindle, being provided with a whorl or fly-wheel, was twirled and dropped, its weight providing the draft, and the momentum of the whorl the twist. There is yet no reason to believe that this method was practised in the New World before its discovery, the draft here being given by a pull of the hands, the spindle resting in a bowl on the ground, or simply held in the hands. The New World whorl is, therefore, not a true whorl,

and was often dispensed with, as seems to have been the case in parts of Peru.

The uniformity of the aboriginal method of spinning cotton is clear when we compare such studies as Roth's⁵ for the less cultured peoples of South America with the processes used in Old Peru. On this account we are scarcely left any other alternative than to conclude that the cotton complex of the entire New World is essentially one, as is the maize complex (p. 21), and that it was likewise diffused from a single center. Just what may be the relation between the wool and cotton complexes is not clear, for we have the salmon area peoples spinning wool and not cotton, and again the buffalo-hair spinning of the Mississippi Valley. As to how the latter was spun, we have no precise data, but in the salmon area a form of the characteristic New World spindle method was used.⁶ Cotton could not be raised there, obviously.

NETTING

The making of string readily suggests nets, a form of textile almost as world-wide as fiber twisting. Accompanying the art are two implements: the shuttle and the mesh gauge. Unfortunately, no careful study of the net technique and the distribution of the implements is available, but one who reads Rau's searching paper on modes of fishing⁷ will see at a glance the importance of the problem. First, the manner of tying the meshes of the net is very much the same everywhere. This may be because the trait is as old and fundamental as the firedrill or merely due to the fact that there is but one good way by which a net can be formed. In the absence of investigation, speculation on this point is useless, yet we seem to have here an unusually promising subject for weighing the relative merits of the independent origin and diffusion theories of culture.

In the New World, fish nets seem to have been in use, wherever possible, from Cape Horn to Alaska and their antiquity is vouched for by the excavation of notched pebbles used as sinkers. Stefansson,⁸ however, secured archaeological data from the northernmost coast of Alaska and western Canada, indicating that nets were of relatively recent introduction among the Eskimo of those districts. In view of the data supporting their antiquity elsewhere and their present universal distribution, this appears as a localized exception.

The netting shuttle and mesh gauge are found chiefly in North America where they have a continuous distribution with Siberia and adjacent parts of the Old World. The precise forms of eastern Siberia are found in Alaska, but as we move southward along the coast toward California, the forms show more variation, as also eastward over the Great Lake area. So far, such implements have not been reported from South America, where nets are frequently made of cotton and woven upon a frame, as is the case with hammocks. The most recent contribution to the subject is Moore's theory that the so-called bannerstone found east of the Mississippi is a mesh gauge; ⁹ however, this interpretation is questionable.

Those closely allied techniques of lace making and tatting are found in many parts of the great cotton-using area, but have not been studied in detail.

BASKETRY

It is doubtful if any people exist who do not understand the art of intertwining twigs or other elements; likewise most of them show some conception of basketry. Even such an extreme marginal group as the Tasmanians made some progress with it, and in the New World it is difficult to find groups of tribes entirely innocent of the art. About the only localities without basketry are among the

eastern Eskimo, and parts of the bison and guanaco areas, all specialists in skin work.

The subject has received a great deal of attention and

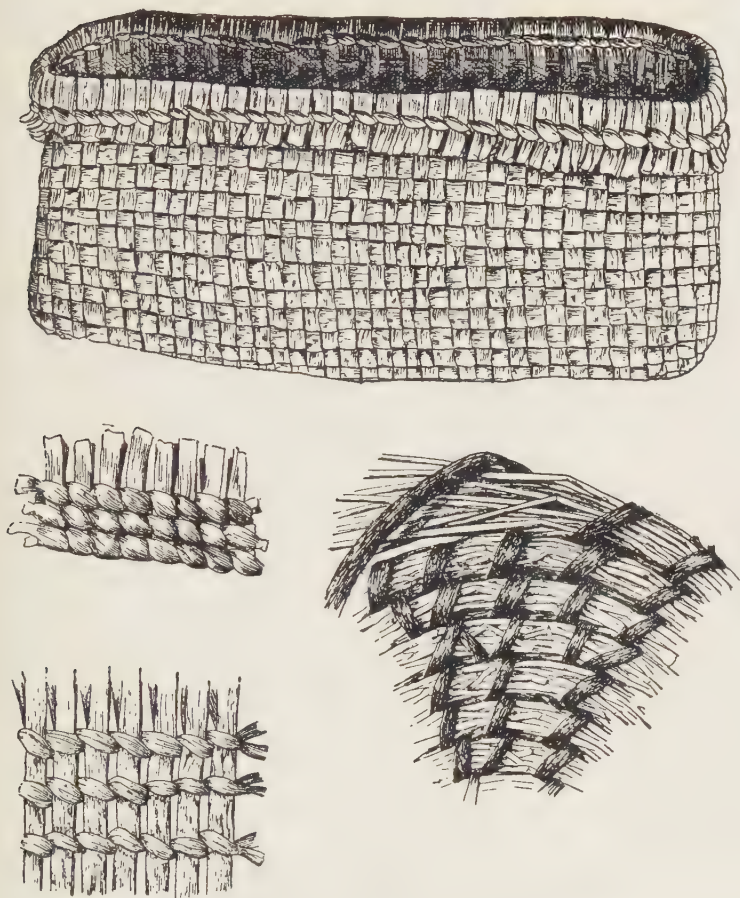


Fig. 13. Basketry: Straight Weave; Close and Open Twine; and Coil

that great master of material culture, O. T. Mason, has left us an excellent treatise.¹⁰ Our museums have extensive collections, while those of private students are equally rich;

there is also an abundant literature. Notwithstanding all this, the subject presents many unsolved problems.

Baskets can be readily classified as woven or coiled-(sewed). The basic concepts for these different classes seem to have nothing in common, from which it is fair to assume that they have separate histories. Under these heads many techniques may be distinguished.¹¹

From our point of view, coiled basketry reaches its highest development in California, where the Pomo are generally given the first rank. Æsthetically considered, these baskets are probably the finest in the whole world. From this center, coiling extends to the interior highlands among the Shoshoni-speaking tribes, thence northward through the inland salmon area and the Déné portion of Canada. Even the Eskimo of Alaska use it, and also the natives of eastern Siberia. To the east, it stops in the plains, but extends southward among the Pima, Navajo, Apache, and other non-pueblo-dwelling tribes. Of the Pueblo peoples only one section of the Hopi uses the process and elsewhere there are but the crudest of attempts. In Mexico the technique disappears and does not come to notice again until we reach Patagonia. While in California a few of the coast tribes were coilers, the main distribution is inland, for beginning with the upper part of California, the entire coast belt including the Aleutian chain is exclusively devoted to woven basketry. In the eastern part of North America coiling is rare, a few of the northern Algonkin tribes following the lead of their Déné neighbors.

Notwithstanding the high development in the coil area, it is itself a part of the great western twined area. (Twine is a form of woven basketry.) The Pomo, for example, also make fine baskets of this weave, which can be said of most coil workers. In other words, coiled basketry seems to be a smaller area overlying a larger one of twined



Fig. 14. General Distribution of Types of Basketry

basketry. The Pueblo peoples do not make it, but do produce a kind of wickerwork like the tribes of northern Mexico, while their non-Pueblo neighbors, the Apache, Walapai, etc., make twined as well as coiled baskets.

Almost all of the twine and coil basket weavers are stone boilers, that is, they cook in baskets by dropping hot stones into their contents. Close fine twining and coiling is thus a necessity, for cooking baskets must be water-tight. In the pottery region of the Pueblos and southward, basketry is open and coarser. This undoubtedly accounts for the very high development of the art in California and northward.

Returning to the concentric distribution of the coil and twine technique, one must wonder which is the older. Some of the Déné coiled globular baskets are almost identical with a Chinese style, but this is more likely due to similar materials, for the intervening Siberian styles are more like those of the Eskimo. Thus coil seems to center in California and twine on the coast of the north, thus indicating their most probable centers of dispersion. We must, however, allow for more complex conditions, since archaeological remains in certain cliff-houses indicate a high development of coil in prehistoric times. The studies of Kroeber¹² and Barrett,¹³ as to the direction of the spiral coil in making the basket, suggest that central California and Arizona are of one type, while southern California (the Shoshoni-speaking tribes) and the interior as well as on northward, are of another. The meaning of this is not quite clear, but can be most readily explained as due to differentiation from two centers of influence. Hence, the chronological relation of coil and twine basketry remains a problem for the future.

The central portion of the bison area marks a hiatus between the basketry of the east and the west. Down the Mississippi and south from the Great Lakes, across the Antilles and on into the manioc or Amazon area of South

America, basketry has one common characteristic in that it is made of flat or splint-like materials. Basketry of this sort is also found in the Andean region, but seems not to have been the prevailing style. The material is usually cane, which is probably responsible for the observed distribution. North of the Ohio River and in New England where suitable cane was not to be had, we find wood splints in use. They are made from the easily separated annual layers of certain trees. It seems a reasonable assumption that a historical connection exists between those two forms, and since basketry of cane is very widely distributed and the materials more readily prepared, we may suspect this to be the parent form.¹⁴

In this connection birchbark vessels may be noted. They are an associate of the birchbark canoe from Nova Scotia to northern Russia.¹⁵ At no place in America, however, do they entirely displace woven or coil techniques.

Though closely analogous to splint basketry, matting does not always accompany it. Yet there are few peoples outside of the great hunting areas who do not use mats in some form. In the main we have two kinds: those woven of flat flexible materials, and those made by binding together long reeds or even twigs.

CLOTH

We can make one clear distinction between basketry and cloth, for the latter is formed by the weaving of spun or twisted materials. It is therefore made of string, or yarn. We have noted that some knowledge of thread-making is universal among mankind, but it is otherwise with the weaving of cloth. Such weaving in the New World may be comprehended under two designations: loom weaving and finger weaving, or upward weaving and downward weaving. In the loom, the weaver begins at the bottom and builds the fabric upward, driving the weft home with

a downward stroke; in the other, the warp threads are hung loosely from a horizontal support and the fabric built from the top, the weft being pushed upward into place. In



Fig. 15. Ojibway Weaving Frame, Showing the Suspended Warp and Method of Twining in the Weft. Weaving Proceeds Downward

loom weaving, a sword or batten is used to beat down the weft and also as a shedding device, though an additional shedding device may be used. In downward weaving there are neither battens nor shedding devices, the fingers



Fig. 16. A Navajo Weaver

*A Typical New World Loom. The Weaving Proceeds Upward
Goddard, 1913. 1*

taking their place, though a bodkin or other pointed instrument may be used to force the weft into position.

Loom weaving begins with the Pueblo peoples and extends southward over the entire area of intense maize culture. Finger weaving is found in the salmon area, the Chilkat blanket¹⁶ being the most unique example, and covers the entire eastern maize area. The data for the Antilles are meager, but since the natives there made some use of cotton, it is safe to assume a loom. In South America the entire manioc area seems to have been influenced by the Andean region in that looms of some kind were in use. Cotton was raised in many parts for making hammocks, which were woven on a kind of loom.¹⁷ In fact, the loom is a correlated part of the spindle-spinning complex, which we have closely associated with cotton. The chances are, therefore, that this whole loom complex spread as a unit.

The distribution of downward weaving will repay further study. Thus in the Aleutian Islands flexible baskets are woven suspended, and the Ojibway and other Central Algonkin tribes wove flexible wallets and soft bags in the same way. This, with the Chilkat blanket, gives us a broad sweep across the continent. In the main, too, this region is also the area of spinning without a spindle.

Turning aside for a moment, we find a peculiar type of sagebrush bark weaving in the plateaus among the Shoshoni and Salish in which parallel twisted strands are joined by widely separated rows of twined thread in pairs.¹⁸ Among the Kwakiutl and neighboring tribes, cedarbark is used in the same way. A similar technique for bags and mats is found around the Great Lakes and eastward. A few specimens from the Salish suggest that wild goat wool was sometimes treated in a similar fashion.

It appears, then, that north of the area of intense maize culture we have in general a basketry-like basis for weaving,



Fig. 17. Distribution of Weaving

and that when weaving is attempted with twisted elements, it is with suspended warp as for baskets and mats. Consistent with this is the rarity of the spindle.

Our problem is not simple, however, because among the modern Salish we find a frame for weaving coarse wool blankets.¹⁹ This may have been introduced by whites, but as the batten and shedding devices are absent and the weave is downward, we still have one of the weaving characteristics of the area. Very widely spread is the weaving of blankets from twisted strips of rabbit fur, a method which has a continuous distribution from Yucatan northward in Mexico and thence over the great plateau area of the United States to Canada where it traverses about the whole of the caribou area and reaches far down into the eastern maize area. This blanket is usually woven on a frame, but also without a batten or shedding device. The similarities between the Salish goat wool blanket and the rabbitskin blanket are so striking that one must suspect some reactionary influence. Returning to our subject, it is clear that the loom and upward weaving developed in the area of intensive maize culture. Also it appears that the spindle tends to associate itself with cotton and wool rather than with either of the two main types of weaving.

Space forbids going into details as to the quality of the product. From early accounts it appears that there was a remarkably high development in the Andean region. It seems that at the time of the Spanish Conquest the textile art was the chief social interest and that the whole governmental machinery was directed toward the encouragement of its production. Thus taxes, fines and tributes were levied in fine cloth. As to the qualities, we have not only the testimony of early observers, but in the desert burial grounds of Peru we have immense storehouses of prehistoric cloth preserved completely in the original forms and colors. Recent studies of museum collections by a tex-

tile expert ²⁰ have shown that the fineness of weave exceeds that of any other known part of the world. As to forms of weave, we find the same techniques as in the Old World, even to the pile and gauze. Outside of America, the known weaves can mostly be traced to southern Asia; hence, it is peculiar that we should find two disconnected world centers of textiles and that each should develop the same



*Fig. 18. Cape of Sagebrush Bark, Showing a Simple Open Weave.
Teit, 1900. I*

techniques. As to the weaves and qualities of Mexico and Central America, we are far less certain, since nature has not preserved samples for us, but from historical statements we infer that they also were of a high order. In southwestern United States we have an environment analogous to that of Peru, but which has less perfectly preserved examples of textiles from its cliff-houses. This, however, is the extreme margin of the area where, consequently, we cannot expect very high development. Our museums contain a few specimens, but they have not been studied by a textile expert. The surviving Pueblos of Arizona and

New Mexico and the Navajo still weave, but to what extent they have been influenced by white contact we are not certain. For a long time they have used the wool of the domestic sheep almost exclusively, and though their work is highly prized by collectors, it is very coarse when compared with Peruvian types. Of the cotton cloth in the manioc area we have very little data. The early accounts of the southern half of the eastern maize area indicate a fair degree of textile development,²¹ for while the information available is not specific, the statements of early observers lead us to suspect that tapestry and double cloth were known, and that while the typical suspended, or downward, weaving was used, some tribes used a true loom, the two-barred loom, and a loom with three cross rods for twilling buffalo-hair cord. Woven feather-work was common, and there is mention of painted cloth. Perhaps the most distinctive textile of this area was buffalo-hair weaving, this art extending far up into the Mississippi Valley.²² The Chilkat blanket of the North Pacific Coast is quite coarse in weave, though somewhat finer than the fabrics of the immediate interior. The remainder of the continent, however, cannot boast anything that rises to the true cloth standard.

FEATHER-WORK

This seems a convenient place to note one of the most characteristic developments of New World technique, *viz.*, feather-work. The center of the art seems to have been in Mexico, where highly decorative schemes were carried out by overlaying cloth with feathers. A few specimens have been preserved for us, but our real insight into this trait-complex is from historical accounts, particularly Sahagun. Cloaks and mantles for distinguished persons, headdresses for war leaders, and other badges of distinction were in feather mosaics.²³ The less distinguished persons some-

times wore mantles of turkey feathers, an art extending to the Pueblo tribes of the United States, thence eastward through the Gulf States and northward as far as the Hudson River. On the Pacific Coast feather mosaics reach a high state of development in California basketry. Feather insignia and headdresses were conspicuous among some of the warlike tribes of the bison area.

Turning southward from Mexico, we find a fair development of feather mosaics in Peru;²⁴ then out into the Amazon country where true mosaic work is rare we find one of the most characteristic traits to be brilliant feather head decorations. Thus, taking Mexico as the center, we see a radiation of feather-work into both continents. We may also be reminded of the very striking parallel in Hawaii and the possibility of an historical connection between the two. On the other hand, the technique by which the feathers are made fast to the fabric is fundamentally different from that used in Peru.

CLOTHING

To describe the different styles of clothing for the various groups of natives is impossible in a few pages, but some of the general characteristics may be noted. The most completely clothed are the Eskimo and the caribou hunters of Canada. These people cut out and fit pieces of prepared skin together somewhat like a modern tailor. Moreover, their patterns are equally intricate and their skill in fitting gives distinct local styles. The southern limits of tailored skin garments are practically those of the caribou area, but in modified form they extend down into the most nomadic part of the bison area. Also, in some of the inland districts of the salmon area variants appear. On the other hand, the whole Pacific Coast plane from the Tlingit of Alaska to Lower California was occupied by bare-footed, scantily clothed peoples, among whom the



Fig. 19. General Types of Costume and Their Distribution

true coat and trousers were unknown. In the southern part of the eastern maize area, the costume consisted of little more than a breech or loin cloth. When needed, a robe or kind of loosely fitted cape was put on. Notwithstanding its ill adaptation to winter climate, this form of costume extended into New England, where, while leggings and moccasins protected the feet, the trunk was covered by a robe so arranged as to leave one arm free. This was covered by a muff-like sleeve.²⁵ In the bison area, as far north as Dakota, where the winters are severe, the bison robe was the only upper garment. It is quite clear, therefore, that tailored skin clothing is an associate of the caribou or reindeer area, and that the only definite intrusion it makes is in the western part of the bison area and the contiguous parts of the salmon area.

In the great weaving area of Mexico and the Andes, clothing is of woven cloth. The peculiarity of such clothing is that it was never cut and fitted, but each garment was worn in the form in which it came from the loom. Thus a poncho, or shirt, is rectangular, with one slit for the neck and two for the arms. In some cases very short sleeves were added, formed by folding a rectangular piece of cloth and sewing. Thus, in the textile area we find the tailor's art at its lowest. That this is not entirely a matter of environment, is suggested by the weakness of tailoring among the skin-wearing tribes of Patagonia, who do little more than muffle themselves in a robe. Originally this robe was worn over one shoulder as in eastern United States.

When we look to the Old World we find a similar distribution. In Siberia and northern Europe, we have tailoring of reindeer skins. Across southern Asia and around the Mediterranean is the great historical textile area from which all our own fine textiles seem to have been derived. As we proceed southward into Africa and Australia we meet with peoples who wear skins, but who do not cut them



Fig. 20. Forms of Footwear

into garments. While there is a climatic factor here, there are still other influences to be considered. Europeans and their New World offspring are the only peoples except the Chinese who specialize in the cutting and fitting of cloth. History shows that tailored garments came into Europe relatively late, whereas in China they seem to be very ancient. Now the Chinese and Europeans were in contact with the reindeer hunters of the north and when we have such continuity for the distribution of a trait we usually consider it a case of diffusion from one center.²⁶ The continuity of the trait in Siberia and America is also clear. We see, then, that the whole tailoring art of the world has a continuous geographical distribution and centers around skin garments rather than those of cloth.

It has been noted that certain peculiar styles of garment in the bison area were due to the natural form of the skins.²⁷ This seems to be the natural consequence with a people who, lacking tailoring traditions, worked out a more complete costume of skins. We have noted that in the case of textiles the rectangular form necessitated by the technique of loom weaving, together with the lack of the tailoring idea, gave a characteristic form to the woven garments. In the bison area we find a skin poncho which follows so closely the main form of the textile poncho to the south that it is difficult to deny a historical relation, though, as stated above, the similarity is disguised by the peculiar contour of the edges of the skin.

There are many other interesting problems in costume, but we have no space for their discussion. For example, a study of footgear is highly suggestive. Thus we find in both the Old and New World that the sandal is a correlative of textile clothing. In the bison area, moccasins have hard soles in contrast to those of the forest regions, which, considering the geographical relations, suggests the intrusion of the sandal idea, though denied by Hatt.²⁸ Going bare-

foot is peculiarly prevalent in regions like the North Pacific Coast, in the Antilles, and down the eastern side of the Andes, where rains are frequent, and where there seems to be a rough correlation between rainfall and barefootedness. In eastern North America moccasins were discarded when walking in the rain, in wet grass, or upon moist ground. Sandals are characteristic of warm dry areas.

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| 1. Adair, 1775. I. | 16. Emmons, 1907. I. |
| 2. Crawford, 1915. I. | 17. Im Thurn, 1883. I. |
| 3. Parker, cited by Wissler, 1915. II. | 18. Teit, 1900. I. |
| 4. Nelson, E. W., 1899. I. | 19. Teit, 1909. I. |
| 5. Roth, 1910. I. | 20. Crawford, 1915. I; 1916. I. |
| 6. Kissell, 1916. II. | 21. Du Pratz, 1758. I; Lewis, T. H. (Editor), 1907. I; Hunter, 1824. I; Adair, 1775. I; Kalm, 1772. I. |
| 7. Rau, 1884. I. | 22. Bushnell, 1909. I. |
| 8. Stefánsson, 1914. I; 1919. I. | 23. Seler, 1904. I. |
| 9. Moore, 1916. I. | 24. Mead, 1907. I. |
| 10. Mason, O. T., 1904. I. | 25. Willoughby, 1935. I. |
| 11. Kissell, 1916. I. | 26. Hatt, 1914. I. |
| 12. Kroeber, 1908. I. | 27. Wissler, 1915. II. |
| 13. Barrett, 1908. I; Weltfish, 1930. I. | 28. Hatt, 1916. I. |
| 14. Speck, 1920. I. | |
| 15. Boas in Teit, 1909. I. | |

CHAPTER IV

THE CERAMIC ARTS

THE first point to demand our attention is the distribution of pottery in general. As nearly as can be told, at the time of discovery, North America had but one large area in which no pottery was made. If we draw a line from Ottawa to the mouth of the St. Lawrence and another to Edmonton, and then one from Edmonton to Los Angeles, we shall have, in the rough, the northern boundary to pottery making. There seems to have been a narrow strip down into the bison area that should be excepted. This extended down through the country of the Arapaho, Cheyenne, Kiowa, and Comanche. On the other hand, certain early information for the Ojibway, Cree, and Blackfoot westward from Winnipeg, indicates that they made pottery; but this about exhausts the exceptions. Practically the whole of the Pacific belt and the great sweep of the caribou area is without pottery, but the Eskimo of Alaska and eastward at least as far as Coronation Gulf made it. Archæological evidence does not change the boundary; hence, we may infer that the distribution of pottery was still in progress at the opening of the period of discovery and that it was distributed from the South. In Siberia we find a pottery somewhat like that of the Eskimo, which suggests that in this case the trait is intrusive from Asia. Yet, we must not overlook the possibility of contact with North American potters around Hudson Bay, a region whose archæology is absolutely unknown. The improbability of this arises from the absence of the trait from the greater part of the caribou-hunting peoples, its tendency

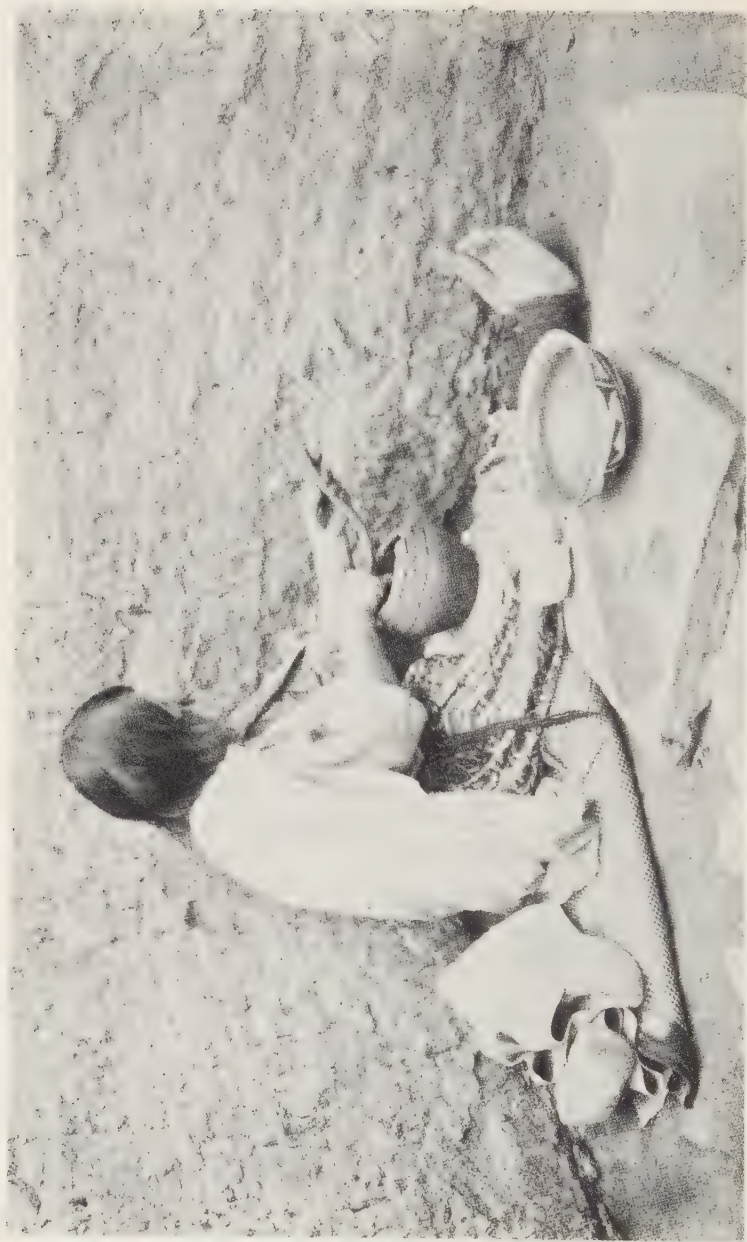


Fig. 21. A Pueblo Indian Potter
American Museum of Natural History Photograph



Fig. 22. Distribution of Pottery Making, 1600-1800

to fail the most typical bison hunters, and that its encroachment in each case resembles the fringe of an adjoining area. We see that its extension out into Saskatchewan and Alberta is coincident with the distribution of Algonkian-speaking tribes: the Blackfoot, Cree, and Ojibway. In the bison area the encroachments are chiefly among the Siouan-speaking tribes. Then, if we recall the limits of maize culture, we note a rather close agreement between the distributions for the two traits. As we know that maize came up from the South, it is reasonable to suppose that pottery came by the same road. As to their time relations, we cannot be so sure, for though pottery has gone a little farther than maize culture, there is a climatic limit to the latter.

Over the Antilles, through Mexico, and on into South America was the great pottery region. In some places archæologists have uncovered deposits of sherds many feet thick, suggesting an intensive pursuit of the art similar to that for textiles (p. 57). Outside of the Andean area pottery is less intense. It has been reported from sections of the manioc area throughout, from which we may infer that its distribution there is approximately continuous. In the South, somewhere near the 30° latitude, it disappears altogether, so that about the only part of the southern continent that did not make some pretense of pottery was lower Patagonia and a portion of the Brazilian highlands.

PROCESSES OF MANUFACTURE

The process of manufacture varied according to locality, but one general characteristic applies to all, no wheel was used in the New World. It is true that large vessels were often built up on shallow baskets and turned slowly to bring the successive parts within easy reach, but this does not involve the principle of the wheel. Even the Lacandon (Guatemala) method of supporting the pot upon a block

which is turned by the feet, is not a true wheel, for the turning is merely for the sake of bringing all parts of the surface to the potter's hand.¹

As a rule, all the New World potters used the coil method; *i.e.*, slender rods of clay were rolled out to convenient lengths and the vessel built up spirally. In some vessels from the Pueblo area the original traces of the coils were retained as decorative motives, but as a rule, the surfaces were afterwards scraped smooth and to the requisite thinness. So far as we have data, the coil method was used in all of the Amazon area of South America and in southwestern and eastern United States, except in the general area about the Great Lakes. In this northern section, we have the Mandan-Hidatsa type, fully described by G. L.

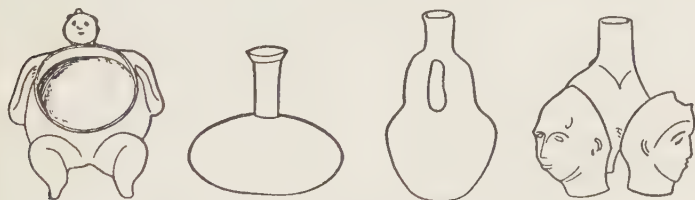


Fig. 23. *Lower Mississippi Pottery.* Holmes, 1903. I

Wilson,² in which the vessel is worked out from a single block of clay, then beaten into shape with a paddle, fired, rubbed with grease, and coated with a solution of boiled maize. Less complete, but still adequate data from the Blackfoot, Menomini, and Pawnee indicate that in the upper Mississippi area we had a generalized type of this process in contrast to the coil method. Eastward in the northern Algonkin area our data are not so good, but it is generally believed that the coil process prevailed, except in the farthest north where the pottery was very crude.

This upper Mississippi, or Mandan-Hidatsa type has a striking resemblance to Alaska-Siberian pottery. The studies of Jochelson and Bogoras³ show one general method for Alaska and eastern Siberia, a method closely paralleling

the Mandan-Hidatsa type. The Blackfoot, Menomini, Cree, and some of the adjacent tribes fired their pots by putting them over the fire, as in use, after first soaking them with fat. This is also the usual method among the Chukchee and Alaskan Eskimo. The archæological specimens col-

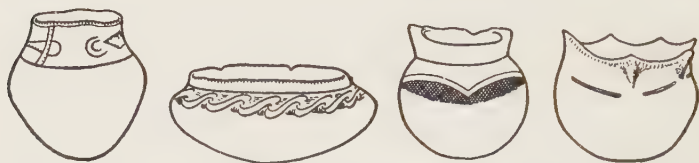
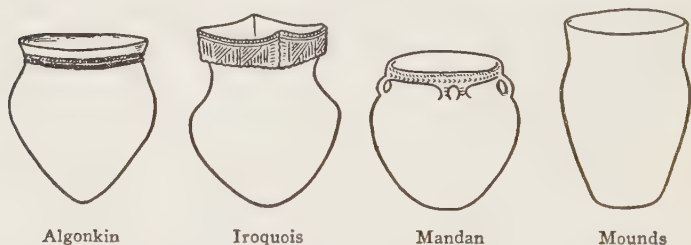


Fig. 24. South Atlantic Pottery. Holmes, 1903. I

lected by Stefánsson at Cape Parry also show this crude firing. We thus have two regions with similar pottery traits, which as previously stated, may, after all, be connected west of Hudson Bay. If so, we may speak of this northern pottery area as a possible intrusion from Asia.

In Mexico, Central America, and the Andean region the coil method seems to have been in use, but as to its relative position we cannot be sure. Traces of molding are seen in prehistoric pottery from Central America and Peru, where



Algonkin

Iroquois

Mandan

Mounds

Fig. 25. North Atlantic and Upper Mississippi Pottery. Holmes, 1903. I

the potter's art ceased to be mere woman's work and rose to the level of a profession. On *a priori* grounds the coil method seems ill adapted to the fine modeling found here, yet it is clear that it is the fundamental method throughout the greater part of the pottery area. That it is the most

primitive way may be doubted, since we find the crude pottery of the upper Mississippi and the trans-Bering region simply worked out from a mass. Such questions, however, must await chronological studies of the ceramic art.

The methods of tempering clay with sand, gravel, pulverized stone, or shell, used in the New World, are not essentially different from those employed in the Old. The use of "slips," or thin washes of such clays as will give pleasing color tones was understood in most places, the exceptions being the southern coast of Brazil and Patagonia, the greater part of eastern United States, the upper Mis-

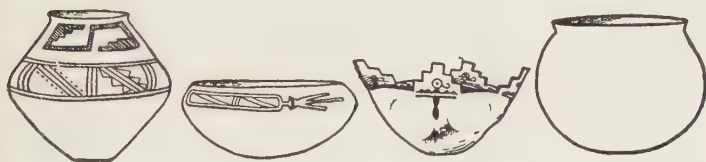


Fig. 26. Pottery from Southwestern United States

sissippi, and Alaska. In short, the use of "slips" is found wherever pottery rises above the mere utilitarian level.

The principle of glaze, highly characteristic of later Old World pottery, was not understood in the New. Yet, in the Pueblo area, a true glaze was used for decoration, giving us what is known as the glazed type.⁴ Since this glaze does not cover the entire surface, its use could not have been to make vessels water-tight. Glazed ware has also been reported from Totonac sites near Vera Cruz and also from the vicinity of Coban, Guatemala.

However, when we turn to pottery paints the New World takes high rank. A brief visit to a museum will make this point clear. The only place where aboriginal pottery of the higher type survived the Conquest is in southwestern United States, and it is from here that most of our knowledge of processes comes. Here we find the paints of both vegetable and mineral origin, the reds and yellows from

iron, the blacks from juices of plants. By proper firing, the desired colors could be made permanent. On the whole, aboriginal clay work was almost exclusively limited to orna-



Fig. 27. Mexican Pottery

mental and useful vessels, though in a few localities in the United States the stone pipe gave way to one of clay and in certain parts of Mexico true bricks were made.

POTTERY FORMS

Our consideration of pottery forms may properly begin with the United States.⁵ On the whole, wherever pottery is extensively manufactured, there is considerable variety of form, but still the preference is given to two or three forms which may be taken as the distinguishing characteristics of the several areas. For example, in the Missis-



Fig. 28. Central American Pottery. MacCurdy, 1911. I

sippi Valley the most distinctive forms are the bottle-like vases and effigy bowls. Among the latter are some remarkable human heads.⁶

In the South Atlantic region, the bowl is the prevailing form and one type approaches the olla of the Southwest. In the North Atlantic area is the well-known pointed-bot-

tomed jar of the Algonkin, and inland the highly original Iroquois square-topped pot. Finally, in the upper Mississippi, we find a simple, globular, narrow-rimmed pot. The greatest variety of form is in the lower Mississippi area, where ceramics rises to the level of a true art.

Proceeding southward, the next great pottery area is southwestern United States, where the leading forms are the shallow bowl and the bulging olla.

Notwithstanding the great complexity of ceramic culture in Mexico and Central America, there is at least one char-



Fig. 29. Peruvian Pottery

acteristic form throughout, *viz.*, a support of three long legs. There is also a tendency toward flat bottoms and cylindrical bodies in vessels not supported by legs.

In Colombia and Ecuador, hourglass shapes abound, while in Peru, we find the pointed jar, the double jar of which "whistling jars" are an example, and the effigy vase, the latter reminding one of the lower Mississippi group. In southern and eastern Brazil, the most distinctive shape is the bulging burial urn, in some cases with a hood. Frequently, these urns take an hourglass form which is also the leading form for household pottery north of the Amazon. In addition, throughout the whole of the Amazon pottery area we find an extraordinarily large tub-shaped vessel, and in eastern Brazil a local development of effigy jars quite parallel to that of the lower Mississippi.⁷

An interesting theoretical problem lies in these pottery forms. It appears that almost everywhere the cooking pot

tends toward the oval or hemispherical form and that the regional distinctions we have drawn are in vessels for other purposes, often largely ornamental. Thus, when we move northward from the lower Mississippi, pottery becomes strictly a vessel for cooking, or specifically utilitarian. In the North Atlantic area, pottery has a rival in soapstone, but vessels of this material have a form of their own which seems to have something in common with the cooking kettle



Fig. 30. Pottery Forms from Eastern South America. Joyce, 1912. I.; Von den Steinen, 1897. I.; Im Thurn, 1883. I

of the eastern Eskimo. Some pottery vessels collected by Stefánsson and Anderson between Hudson Bay and the Mackenzie River have corners quite like Eskimo soapstone kettles, but the better type of Alaskan ware has a shape like that common in Aleutian baskets; yet, if there is a fundamental ceramic container concept in the New World, it is that of the globular cooking pot. The strong claims for the recognition of this form appear when we examine the animal-like vessels of Central America and the lower Mississippi in which we usually see the globular part with ornamental appendages.

POTTERY DECORATION

Decorations of pottery fall into two groups, those produced by secondary modeling and true designs. The former is a prominent feature in Peru, Colombia, Central America, the lower Mississippi, and eastern Brazil. Elsewhere it is

relatively infrequent, the preference being given to painted or incised designs. The secondary modeling of the so-called Chiriqui pottery from Panama has been carefully studied by MacCurdy⁸ who finds that practically all consists of efforts to represent the armadillo and the alligator. Von den Steinen has given an illuminating discussion of animal forms in eastern Brazil, in some cases so reduced by conventionalization as to appear symbolic.⁹ A somewhat similar study has been made of lower Mississippi pottery,¹⁰ but without the help of the makers, the specimens being prehistoric. In Colombia we find frog and monkey-like creatures represented as peeping over the rims of jars, but it is in Peru that ceramic modeling reaches its highest level. Here, we not only have animals and natural objects faithfully represented, but human heads so executed as to suggest their being portrait jars.

Painted and incised ceramic decorations tend to be geometric and often closely parallel textile designs, to be discussed under the next head. We shall, therefore, defer their discussion until the whole subject of design has been considered.

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| 1. Tozzer, 1907. I. | 6. Moore, 1911. I. |
| 2. Wilson, G. L., Am. Mus. Mss. | 7. Von den Steinen, 1897. I. |
| 3. Bogoras, 1904. I; Jochelson, 1908. I. | 8. MacCurdy, 1911. I. |
| 4. Kidder, 1931. I; Nelson, N. C., 1916. I; Guthe, 1925. I. | 9. Von den Steinen, 1897. I, p. 264. |
| 5. Holmes, 1903. I; Vaillant, 1932. I. | 10. Holmes, 1903. I. |

CHAPTER V

DECORATIVE DESIGNS

IN the preceding discussions we have ignored the most interesting and suggestive sides of textiles and ceramics, namely, their decorations. Wherever such products occur we almost always find them richly ornamented by designs in color which constitute the greater part of the decorative art of their makers. Taking the New World decorative designs as a whole, we are impressed with their extreme geometric unrepresentative character and the rarity of realistic art. A stroll through a large museum reveals an astonishing complexity of geometrical design in contrast to similar collections from the Old World. Nowhere else do we find anything in basketry approaching the finest basketry decorations of the Pacific Coast or in pottery that of the Andean region. From the standpoint of æsthetic values, the ancient Old World products may be rated as superior, but the range and richness of geometric design in the New World cannot be denied.

Anthropologists have given the subject of decorative design a great deal of attention, and we consequently have for the tribes of the northern continent a body of special research literature not equalled by that for any other part of the world. The use of ceramic designs as indices to chronology and relationship in extinct cultures is a well-established method in archæological research, and the study of decorative designs used by living Indian tribes is an important objective in ethnology.¹ In these studies more attention has been paid to the Indian tribes of the northern

continent, past and present, than to other parts of the New World, so our first task is to consider the status of the North American design problem.

TEXTILE DESIGNS

If we compare the decorations upon a representative series of baskets from the Rocky Mountain region with those upon a series of pottery vessels from Arizona and New Mexico, there seems to be a definite similarity. Closer inspection suggests that this is true because certain combinations of angles and checker patterns are common to both. The chief point of difference is that curved lines and realistic figures are rare in basketry, whereas they occur with somewhat greater frequency on the pottery in question. Again, if we examine the blankets of the Navajo, we find a series of designs strikingly like those upon the basket series. Since we know that the Navajo weaving is of recent origin, we infer that many of their blanket designs were borrowed from basketry and because of the much greater distribution of the latter, that the pottery designs were also greatly influenced thereby.

An important point has been made that the technique of weaving itself places certain form limitations upon designs which tend to make them similar, irrespective of the wishes of the artist.² In all weaving we have a geometrical relation between the warp and weft elements since they have a right-angle relation to each other and, in the main, can build up a design by equal rectangular units only. In basketry these units are usually so large that diagonals can only be run as steps and even in cloth it is difficult to escape this effect. These stepped designs and diagonal rows of small squares constitute one of the prevailing characteristics of textile art, so that in our discussions of design distribution we must make full allowance for similarities due to the limitations imposed by the weaving technique.

For example, we find a certain type of designs for cane baskets in Louisiana, and passing over to northern South America,³ we find baskets of similar materials with designs

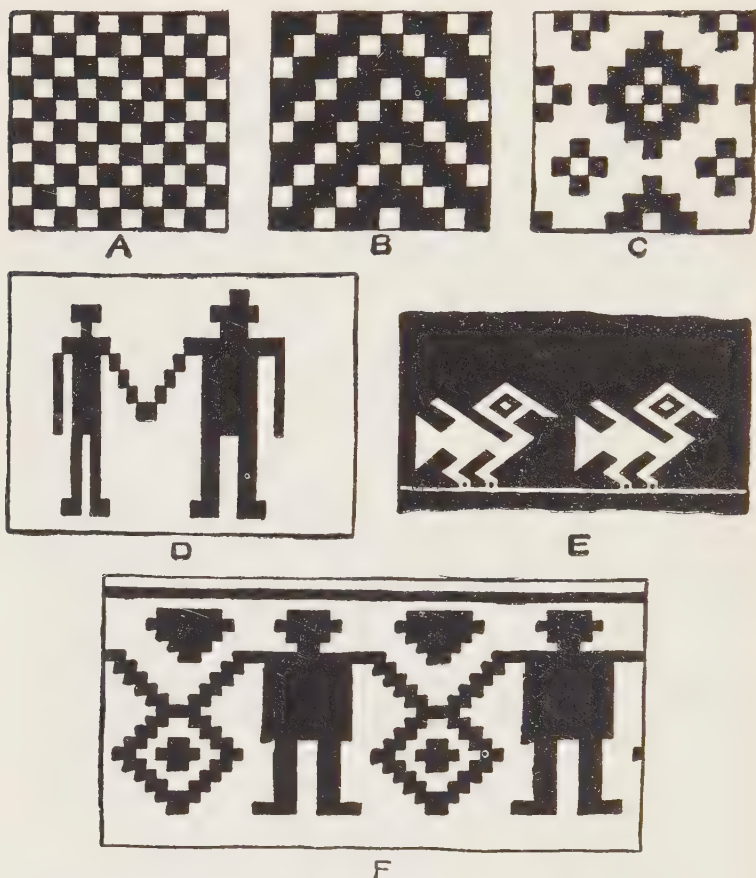


Fig. 31. Types of Textile Design. a, Checker; b, Twill; c, A Typical Pattern from Cane Basketry; d, Design from the Penn Treaty Wampum Belt; e, Bird Figure from Peruvian Cloth; f, Design on a Peruvian Basket. Holmes, 1888. I

almost identical. In this case we have other facts that suggest this similarity to be but another example of culture diffusion. Yet, we can find baskets in some of the Pacific



Fig. 32. Types of Prehistoric Peruvian Textile Designs

Islands which can scarcely be distinguished from cane baskets of the New World, if we consider the designs only, and in this case there is no good reason for expecting diffusion.

The limitations set by weaving are more clearly shown when realistic figures are attempted (Fig. 31). Painted pottery, on the other hand, imposes no such restrictions in the matter of design, but leaves the hand free to make curves of any form. Accordingly, when we find the aboriginal potters of Arizona and New Mexico using a great array of checked and angular patterns, with stepped lines, we must necessarily refer them to textiles.

Another significant point is that the extensive use of realistic figures in cloth occurs only where weaving is highly developed, as in Peru and Mexico. When we examine examples of such decorations as are preserved in our museum collections, we note that even so, these figures are greatly distorted to make their contours coincide with the fixed lines of weaving. Further, it is also in these same localities that pottery decorations become more realistic, suggesting that some allowance must be made for the degrees of complexity in the culture of the weavers. It may be that the simple designs upon New England (Algonkin) pottery are about all that can be expected from such a crude cultural setting. Yet, we must conclude that in the earlier stages of their historical developments in the New World both textiles and pottery were decorated with geometric designs and that the use of realistic figures came later. This is somewhat at variance with a current theory of art genesis which considers geometric art to be mere conventionalizations of earlier realistic figures. We have already noted how the weaving technique itself conventionalized all figures and have recognized other factors producing conventional effects, but the cultural conditions in the New World do not seem consistent with the above theory of de-

sign origin. The total distribution of the several types of design points clearly to a development from the simplest geometrical textile designs to the realistic textile figures.

DISTRIBUTION OF DESIGNS

Like many other cultural traits, designs tend to fall into geographical groups. While the boundaries to such areas cannot always be drawn with great precision, their centers can be located without much difficulty. We have noted that California seemed to be the center of the highest attainments in basket-making, and it so happens that this is also the great center for basketry designs. As indicated on the map (Fig. 14) the basketry area includes the great plateau region extending from well up into British Columbia southward to the non-Pueblo tribes of Arizona and New Mexico. Here we saw that two kinds of technique were in use, coil and woven basketry, usually twined weaving, and that while tribes tend to specialize now in one of these and then in another, this variation seems to have little effect upon the designs, for the same designs occur upon both. The coil technique offers great freedom in design because of its similarity to embroidery; but this is perhaps, compensated by the trick of overlaying twined strands with thin strips of colored materials to produce the designs. In the inland salmon area, coil baskets are decorated by imbrication, which is also an ingenious overlay, and for that reason was most likely derived from twine overlay. The basketry of the Tlingit gives a different type of decoration, chiefly in the use of bands of overlay, but these are a secondary part of the art of the North Pacific area to which we shall return later.

Another important art center is to be found among the Pueblo peoples of the Southwest, where we see an exuberant development of pottery designs and blanket decorations.⁴ Archæological collections⁵ show that, if anything, there has

been a deterioration in pottery decoration during the historic period but, on the other hand, there seems to have been a marked development in blanket designs. We are clear

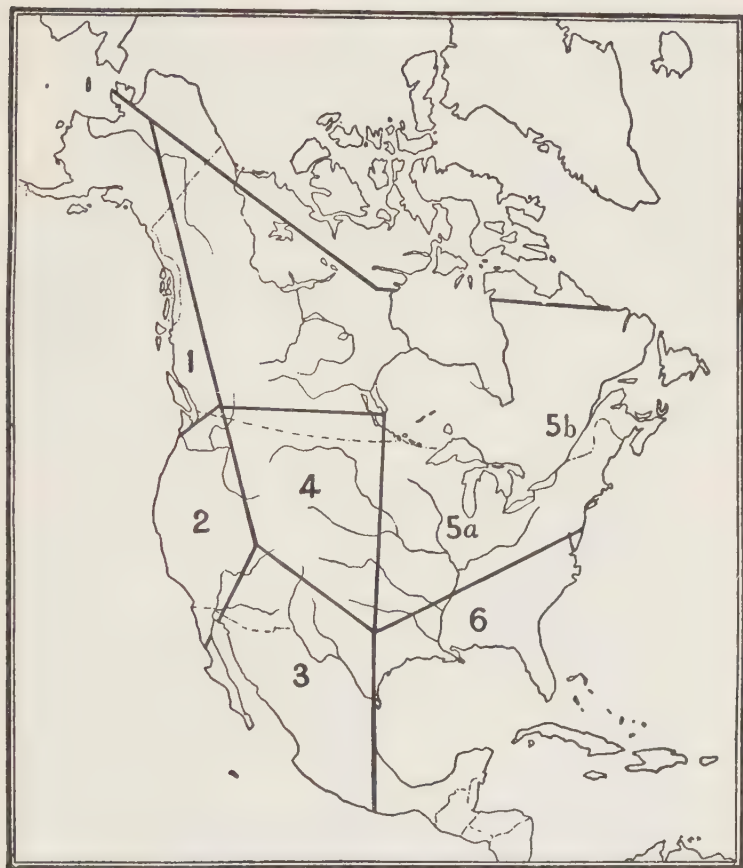


Fig. 33. *Decorative Design Areas in North America: 1, North Pacific Coast Center; 2, California Center; 3, Southwest, or Pueblo Center; 4, Plains, or Bison Center; 5, Eastern Center—subtypes a and b; 6, Southeastern, or Gulf Center*

that Navajo textiles have passed through a development of this kind, for the old specimens are almost entirely striped.⁶ While Navajo weaving is supposed to be of recent origin it is obvious that the designs were not copied from Euro

pean techniques, but from aboriginal American models. Further, we have some textile remains from cliff ruins in which striped decorations are the rule and the same tendency is shown in Hopi and Zuñi weaving. A few exceptional specimens have come to notice that bear designs of another character, particularly those from the Gila River;⁷ but these are toward the south and may therefore be intrusive.

However, our most important problem in this area is to be found in pottery decoration. If we consider modern Pueblo pottery only, we find that its designs are largely geometric in appearance, although a strong realistic tendency is also plainly evident. Even many of the highly conventionalized geometric forms prove to be symbols of mountains, clouds, thunder, rain, etc., while among them appear unmistakable drawings of plants and animals. Yet, taking modern pottery as a whole, the geometrical character of the designs seems to predominate. In the discussions of Southwestern chronology, we shall see that the more widely diffused and older type of pottery is decidedly geometric in character. Thus, two of the favorite design concepts are the simple checker textile pattern and the step or "terrace." Again, if we look almost anywhere in the Pueblo area we shall find these patterns occurring. They have so sure a place in textile art and lend themselves so much less readily to freehand work that a non-pottery origin is suggested. In 1914 Fewkes⁸ called attention to the now celebrated Mimbres pottery which presents a localized development in realistic pottery designs, though geometric forms and tendencies are not wholly absent.

Adjoining the southwest and east of the great basketry area is the bison area, which is weak in basketry and cloth, but still has a highly developed embroidery of beads and quills in which the designs are geometric and manifest many of the characteristics of textile designs.⁹ In fact, the way in which beads and quills are handled in this area requires

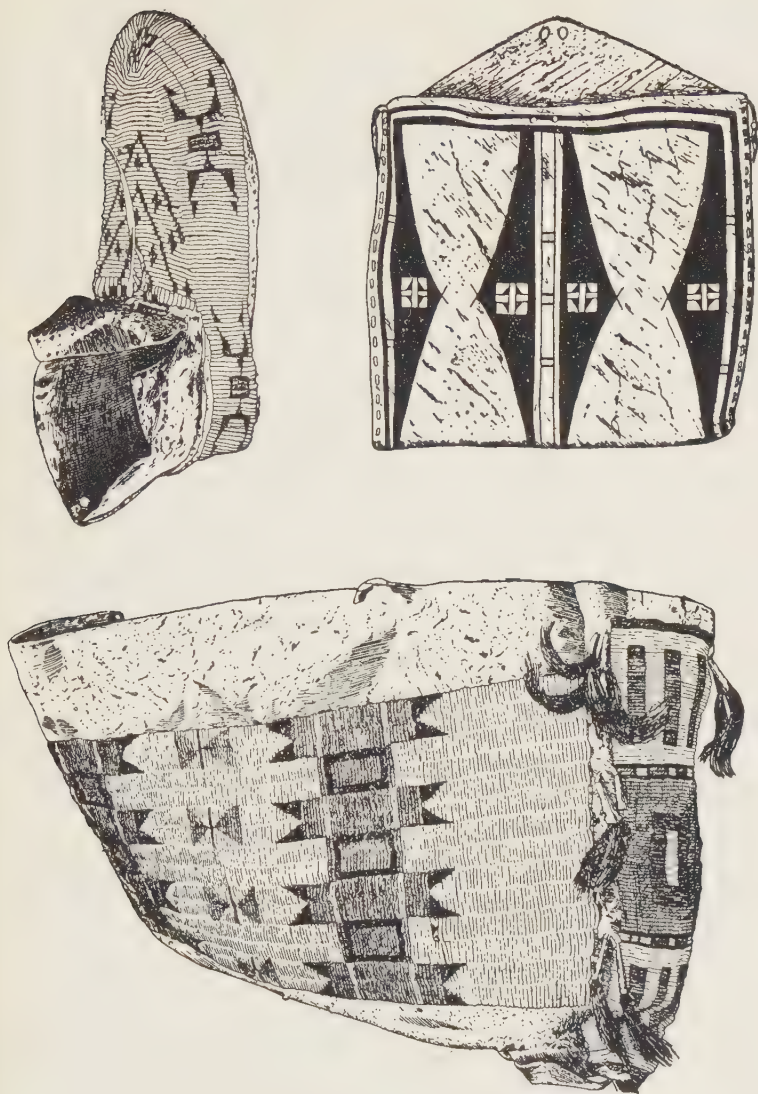
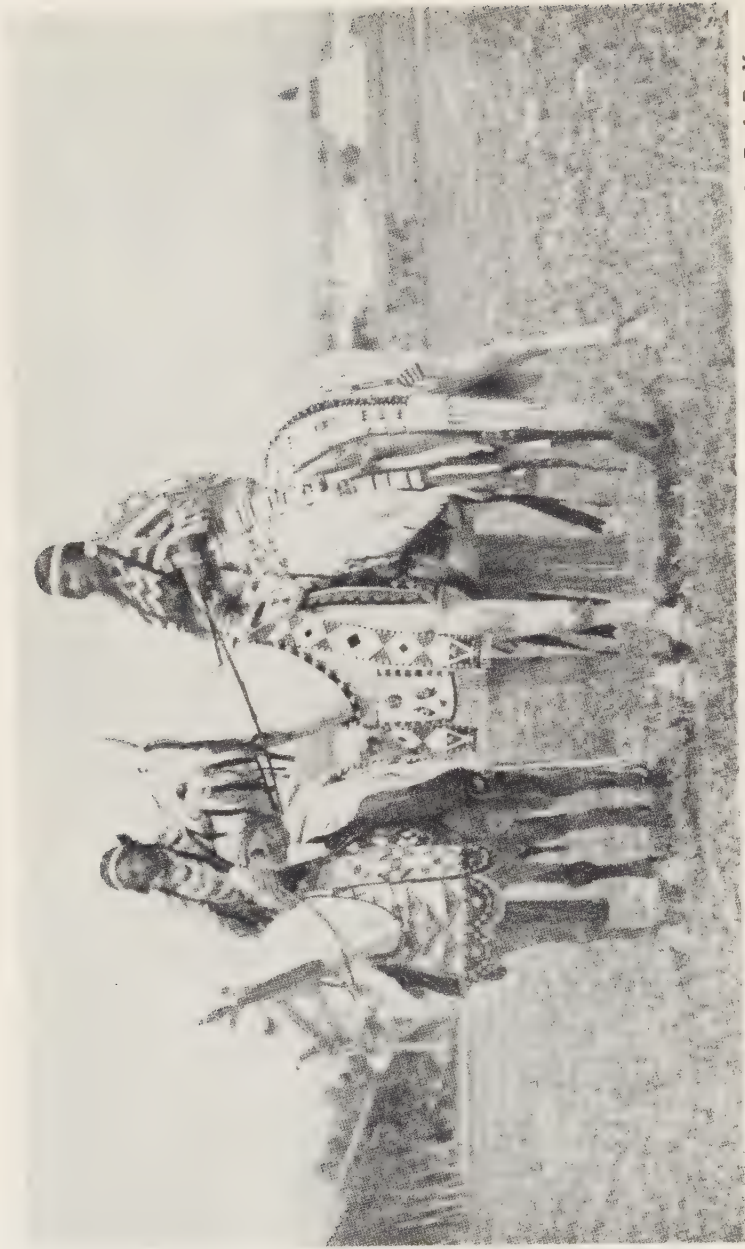


Fig. 34. Beaded and Painted Designs of the Plains Indians.
Kroeber, 1902. I

that designs be built up by accretions of small rectangular surface contours, which is just what we have in weaving. If our general principle of technique limitations holds, we should expect to find geometric forms prevailing. This is exactly what we do find (Fig. 34).

Even among the basket-making Apache of the Southwest, we find objects of skin decorated with designs upon covered surfaces of beads. This is clearly an intrusion from the bison area because it is only now and then that we find identity between the designs on Apache baskets and objects of skin, each having a style of its own. On the other hand, these beaded designs are quite like those found far out into the buffalo country. These buffalo hunters did not decorate pottery, in fact, some did not even make it, but they did paint rawhide objects and, strange to say, even this freehand work was in geometric designs not at all unlike those in beads and quills. While the reason for this is not entirely clear, we note that all the beadwork is by women, who also paint the geometric designs, whereas the men who paint upon robes, tents, etc., use realistic figures. This suggests that the difference may be merely a matter of social convention.

An important problem is the origin of Plains art as a whole. Though we have shown that bead technique imposes textile limits upon the decorations, the fact that the Plains area is in direct contact with basketry-making peoples and the weavers of the Southwest reveals the possibility of diffusion. While this, like most other problems, is one for the future, there are several good reasons for believing that the art of the bison, or Plains area, is in the main an independent development. In the first place, its center is in the very heart of the area, while it is weakest on the margins. In its great western Shoshoni fringe we find a condition not unlike that of the Apache in that beadwork and basketry exist side by side but with different design systems.



Photograph of Blackfoot Women by Fred. R. Meyer
Fig. 35. The Decorative Art of the Plains Indians

There is, however, a more direct approach to the problem by the analytic comparison of designs. Kroeber¹⁰ has carefully analyzed the designs of California baskets and Plains beadwork in search of the prevalent design units. When these are found, they prove to be, in the main, very simple geometric forms and though many can be very closely matched for the two areas, their very simplicity, taken with the principle of textile limitation, lessens the probability of their common origin. On the other hand, if we take more complex design wholes we find very little correspondence between the two areas, for each has a number of highly unique designs not found in any other part of the world. Hence, even this method tends to assert independence of origin.

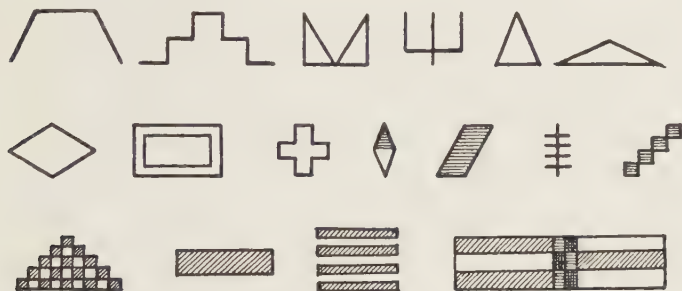


Fig. 36. *Design Elements Used in Plains Indian Beadwork.*
Kroeber, 1908. 11

To the north and east of the Plains area we have another art area in which neither ceramics nor true textiles play an important part. This region comprises the greater part of the caribou area and the northern half of the eastern maize area, a region in which, although the decorations are again by beads and quills, there is yet a distinct type of design. Here we have exactly the opposite of the preceding, for instead of textile-like designs we find curved figures and more or less realistic, plant-like forms. The cause for this very extraordinary contrast is an important problem.

When we try to locate the geographic center of this art, it proves somewhat elusive, but closer inspection reveals two sub-centers, one in eastern Canada, the other near Lake Superior. The eastern sub-type has been brought to notice by Speck¹¹ under the designation *double-curve* art (Fig. 37). These curved designs, while obviously resembling vines and leaves, are still somewhat less realistic than bead-work designs of the western sub-type, perhaps because of their greater conventionalization. Though these curved designs do occur in beads and quill, they are more frequently found incised in birchbark or painted on skins. The best-known examples of the latter are the Naskapi coats in museum collections. These observations suggest that this eastern sub-center was originally dominated by freehand work upon skins and bark from which the somewhat similar beaded designs were most likely copied. No cloth is made here and practically no woven decorated basketry, but we find some woven wampum belts and some bands of quill and moose-hair interwoven with bast fiber, in which the designs tend to be geometric. So far, we do not recall a single example of the double-curve art in these truly woven objects. All this suggests that we have here at the eastern sub-center a type of design which developed from freehand drawing upon skins and birchbark.

When we turn to the western sub-type we find practically no painting upon skins or decorative drawing upon bark and the beaded decorations correspondingly more numerous and decidedly floral. From this sub-center come those admirably beaded flowers seen in our museum collections. Speck¹² has included the more conventionalized examples of these under his double-curve motive, but all they have in common seems to arise from their universal floral foundations. While there is little in the way of skin painting accompanying the western subtype of beading, there is a far greater textile development, especially at the sub-center. The weav-

ing of bands containing quills or moose-hair is a feature in the Déné region. From the Ojibway of Wisconsin southward, we find a rather high development of bag weaving and many forms of mats. The designs upon quill bands and mats are almost without exception geometric, while bags show two forms—purely textile geometric and realistic animal figures. Drawing and sketching upon birchbark was developed almost to the point of writing and in that sense was not decorative. It was, however, entirely pictographic. Wooden objects were not infrequently adorned with incised curved designs somewhat like the floral effects in beads. The chief differences, therefore, between the two sub-centers are the disturbing textile developments in the west, with a decided realistic tendency in beadwork, while in the east freehand double-curve floral figures prevailed. The similarities are in the more fundamental character—a predominatingly freehand floral decoration. In the preceding areas we found textiles or embroidery techniques in the majority, and at the same time the decorative art was geometric. But here in the north and east we find textiles extremely weak; yet, when they do appear they tend to geometric forms. Beadwork, however, more often followed the freehand motives than not. So we see here the suggestion of a chronological relation in that this particular beaded art was derived from bark and skin decorations.

The extreme floral character of some of this beadwork has led many to regard the whole as a post-Columbian development. The very wide distribution of the Cree and Montagnais, together with their very early intimate association with French colonists, presents a favorable condition to rapid diffusion. Yet, the very characteristic double-curve art on bark and painted skins cannot be attributed to Europeans. All that can reasonably be conceded is that their trade stimulated the use of beads, and their decorative preferences tended to emphasize the old floral character.

On the other hand, there seems not the least reason to doubt that the very striking beaded flowers of the west are due to European influence.

Strange to say, all the regions we have so far considered

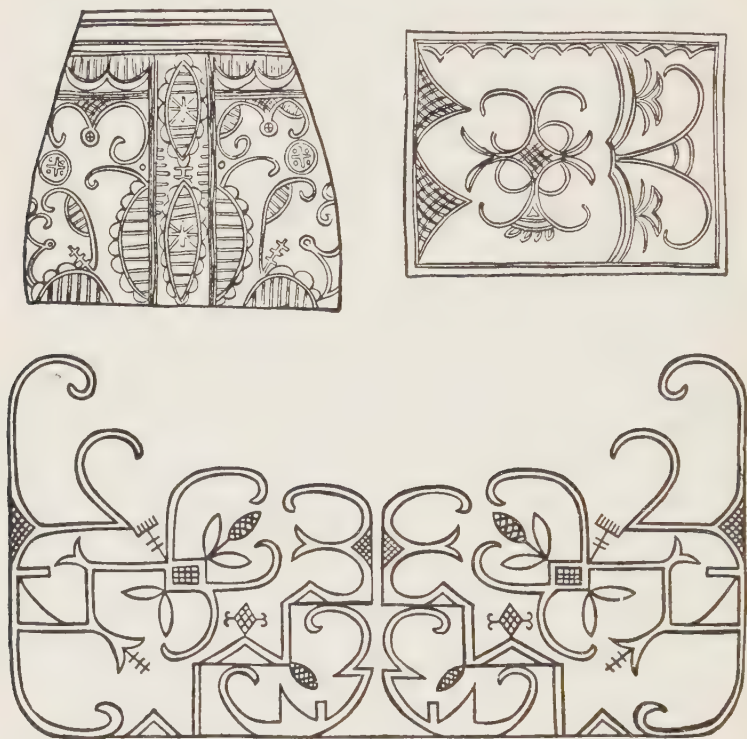


Fig. 37. Decorations on Birchbark from Eastern North America. The upper figures represent the side and bottom of a bark vessel from the Penobscot Indians. The lower sketch is a typical "double curve" design. (Center 5b, Fig. 33.) Speck, 1914. I

are almost completely innocent of carving or modeling in the round, everything being flat. But we now turn to the North Pacific Coast and Eskimo areas where carving is the leading art. Faint traces of carving appear at the northern border of California and grow stronger as we ascend the coast

until we reach the Haida of the Queen Charlotte Islands which seems to be its geographical center. In the central part of the area we find the great totem poles and colossal grave figures, besides an endless array of smaller objects, all in wood. As we proceed still farther northward, wood tends to disappear and ivory to take its place. Like most other traits, ivory carving begins to be frequent with the Tlingit and gradually grows in intensity as wood disappears, the difference appearing merely as a matter of environment. Then as we go around the north coast of Alaska and eastward along the extended habitat of the Eskimo, carving almost dies out. This peculiar distribution among the Eskimo suggests an indirect historical relation with the carving center.

The intense development of carving at this center has a noticeable effect upon decoration. Boas¹³ has shown how the very curious relief carving upon the outsides of wooden vessels results from an attempt to carry around the contour of animals or men in such a way that the whole may stand for a realistic model. Naturally, when flat surfaces are treated the whole figure is spread out upon it. Sometimes these designs are merely laid out in color and though no doubt more conventionalized thereby, they are still the undeniable offspring of carving. All this is a feature of the central group of tribes where the art is most intense and where it is, in part, at least, the expression of a very complex system of beliefs concerning family ancestors. North from the Tlingit and south from the Nootka of Vancouver Island we have many vessels carved in the life-like forms of animals, but practically no trace of the relief ornamentation just mentioned, a fact which strongly suggests that this feature is purely a development of the more intense art at the center and that it is, therefore, relatively recent.

We have noted that there is also a textile center in this

region, but we now see that it does not coincide with that for carving, its location being inland among the Salish peoples. Emmons ¹⁴ has made a good case for the relatively recent introduction of the Chilkat blanket to that tribe. In this famous textile we usually find the queer spread-out animal forms noted above and not the usual type of textile designs. It has been clearly shown that this decoration was directly copied from house fronts.¹⁵ Now, if the blanket came from the southeast it must have arisen in a place and at a time too remote to have incorporated this decoration at the start. In fact, there is evidence of several sorts to show that these textiles were originally decorated with bands of small geometric figures. The basketry of the Haida and Tlingit ¹⁶ shows a similar banded style, and this, in turn, has a curious resemblance to the quill woven bands of the Déné people of the adjacent caribou area. The significance of the latter is not clear.

Thus, we find in this art area a good example of conflict between a carving center and a textile one, the Chilkat blanket being about the only compromise. The Eskimo of Alaska took up basketry but not its design decoration.

Next we turn to a more difficult problem; namely, the art of the southern half of the eastern maize area. The data available are so much less adequate than for the preceding that one must hesitate even to enter such a discussion. For though, as stated elsewhere, we have historical records vouching for a higher textile development in the Gulf States than in the north, no specimens have come down to us. There are reasons for suspecting that the bag weaving we have noted for the upper section of the Mississippi Valley is in a large measure the fringe of this area, but without some corroborative data we are scarcely justified in formulating it as an assumption. Basketry has survived in Louisiana,¹⁷ where we find cane weaving in designs of black and red. As previously stated, the mate-

rial and technique restrict designs to just such as we find here, and from this it may be inferred that they truly represent the former basketry art of the whole South-eastern area. What may be the relation of the pottery found here to the historic tribes is also a puzzle. If this pottery was extant at the period of discovery, then one of the most distinctive design concepts was the spiral scroll.

When we turn to the art of the intense culture area, our problem becomes very largely one of archæology and the yet undetermined sequences of culture, because the thoroughness of the Spanish conquest practically obliterated the



Fig. 38. *Prehistoric Sketches of Textile Designs from the Maya.*
Spinden, 1913. I

native culture. No doubt careful research would still reveal many surviving traits in the present populations of these countries but such studies have not been sufficiently numerous to assist us. As suggestions we may cite Tozzer's¹⁸ study of the Lacandonones as a surviving Maya people.

With numerous dense groups of people, as in ancient Mexico and Peru, where a political organization gradually overflowed and submerged the successive local groups, there must have been a great variety of art types that persisted in the homely affairs of life; but the succeeding centuries of European trade seem to have swept them into oblivion. For Mexico and southward we have no clear idea of the aboriginal textile development. Among the present Hui-chol¹⁹ we find considerable weaving in which the designs have a marked realistic tendency. So far as known, this

is a trait of the modern textile art for the whole stretch of country from the Rio Grande to Panama. While it is certain that we have here a result due in part to contact with Spanish culture, there is no reason for assuming that a



Fig. 39. Mexican Textile Designs. The Costumed Figure is from a Prehistoric Maya Drawing (Spinden, 1913. I.), but the other sketches represent the work of modern Huichol Indians (Lumholtz, 1904. I.), in Northern Mexico

new textile art was created since the conquest. The general similarity to Peru, in the range and direction of conventionalization, is sufficient warrant for assuming an original textile art of a similar level. We may, however, get some idea of Maya textile design from the known sculptures and codices.²⁰ According to early Spanish authorities, the Maya peoples were the most expert weavers in New Spain, which statement, if true, enables us to gauge

the whole state of the art from the illustrations the native artists have left us. From these the specific resemblances to modern native Mexican weaving are clear ²¹ and also the general resemblance to Peruvian styles previously noted (Fig. 39).

When we turn to the pottery of this region, even less survives among the living peoples so that any study of the ceramic art also becomes essentially archæological. However, the ceramic collections in our museums are not extensively embellished with painted designs. In contrast to the pottery of the Pueblo area they are plain, modeling in relief and realistic painting here taking the place of mere design. In the Panama area, including Costa Rica and the Chiriqui district, we have a complex of alligator and armadillo designs, recalling again Peruvian and some modern Mexican textile decorations.²² In a few instances the Maya were particularly successful with textile-like designs for mosaic and stucco work, but these, the well-known case of Mitla in Mexico,²³ and the single example at Chanchan, Peru, are the striking exceptions to the rule that wherever architectural embellishment is undertaken, it tends toward realistic carving.

When we come to South America, we find that certain accidents have preserved us a good series of aboriginal textiles from Inca culture. In the technique of design these ancients were remarkably proficient, even to the extent of using complex color sequences.²⁴ On the whole, their designs tend to be realistic figures: men, cats, birds and fish being distinguishable in many degrees of conventionalization. In fact, we find here the best illustrations of the geometric biases in loom weaving. Associated with this art is an equally superior development of pottery decoration. One prominent feature of this pottery is the introduction of life forms, so that we have jars representing persons, birds, monkeys, fishes, etc., in which the modeling is of a



Fig. 40. A Series of Peruvian Designs. Mead, 1916. I

high order. The decorations are in both color and incised work. In color, we have the great triumph of Nasca and Titicaca ware, so far superior to anything yet discovered in the New World. The painted designs upon this pottery are comparable to those upon cloth in that they have the same realistic tendencies. Certain fixed conventional forms appear both on pottery and cloth, suggesting the fundamental unity of design concepts for both ceramics and textiles.

As we go out from Peru in either direction, pottery decorations become inferior; consequently, we may be sure that the center of the art was in that country. The great problem for the future is to discover the historical relations of this center to the adjacent cultures. If we follow around the north coast and down into Brazil we find greater use of painted pottery decorations than in the corresponding parts of North America. No doubt one factor in this distribution is the presence of the very strong Peruvian art center. In a similar way this Peruvian influence can be seen in Chile and the adjacent parts of Argentina, presumably again connecting with eastern Brazil.

As to the textile designs in these outlying regions, we are so ignorant that little can be said, though the explorations of German anthropologists²⁵ among the wilder peoples of eastern Brazil give us a fair idea of designs in a few localities. As previously noted, we find here the designs peculiar to cane basketry in all parts of the world; however, some textile work exists in which simple striped designs occur, though on the whole the designs are similar to those upon basketry. Painted decorations upon bark and wood are also found which have a geometric character; but these are almost entirely made up of triangles.

In the northwest Amazon country there is an identity between pottery designs and those used in body painting.²⁶ The colors are laid on in large masses, but in the form of

true textile designs. A similar style of body painting has been reported for Panama.

This relatively brief survey of New World art reveals some interesting general characteristics. The experience of anthropologists shows that by generalizing design characteristics we can consistently differentiate a few centers of development and influence. These prove also to be centers of specialization in industrial art. For example, the tribes of California are lamentably deficient in everything but basketry. Again, we see that geometric art and realistic decoration tend to be antagonistic to each other in the sense that wherever one predominates the other adjusts itself to it. But while this is so strikingly true of the centers we find many intermediately situated peoples practising the two or more special arts of the nearest centers, but less successfully. In North America particularly we find a tendency for women to produce the geometric art and men the realistic. That this has an important psychological basis is unlikely since the distinction is clearest among the groups where hunting is the chief work of the men. Here the textile arts fall to the women, who thus find their activities limited. Among the Pueblo peoples on the other hand, where the men wove, we still find geometric art.

Finally, we must not forget that we have been but skimming over the surface of a very complex problem. Each small territory presents its own particular characteristics. Art, too, has everywhere strong individualities which tend to obscure the common elements, thus making every thorough survey of even a small area extremely exacting. The work of Kroeber²⁷ in California demonstrates that often the large areas we have designated can be resolved into many small geographical sub-areas, which can, in some cases, be further differentiated into tribal types. However, all this is too intricate for discussion here.

SYMBOLISM

No discussion of our subject, however brief, can disregard symbolism. Though an old subject, it seems to have been given new life by Von den Steinen's observations in Brazil ²⁸ and Haddon's ²⁹ vigorous exposition of the realistic origin theory. Following this, with Boas ³⁰ as leader, a number of American anthropologists began an intensive study of designs in the basketry and beadwork areas we have discussed. It was found that all tribes have names for many of their designs and in some cases, at least, employ these names to express ideas. Since these are almost always derived from familiar objects, as bird, feather, tree, etc., we are confronted with the possibility that the names were given at a time when the design was truly pictographic. This theory must be considered notwithstanding that we found certain objections to such origins in the influence of the technique. Accordingly, we have this problem: When a design is called by a definite name, is that name a clue to its historic origin?

The study of design names shows that this nomenclature develops according to the practical needs of the workers, for among the Pomo ³¹ and Dakota,³² who lead in their respective centers, designs have been analyzed into their structural elements and names given to the same. Further, when definite composite designs have been established, the names of the separate design elements in the complex are compounded into a single term. In other words, we have an intense systematization of design composition, with a corresponding terminology. When we turn to less specialized decorations like the Maidu ³³ and Arapaho ³⁴ we find that they have a much longer list of design names, which upon inspection prove to be the result of a less elaborate classification and a failure to comprehend the advantages of design analysis. This forcibly suggests that the present

association between a design and its name is quite likely to be the result of other than genetic causes.

Another way of testing the case is to compare the designs associated with one name. For example, from the special

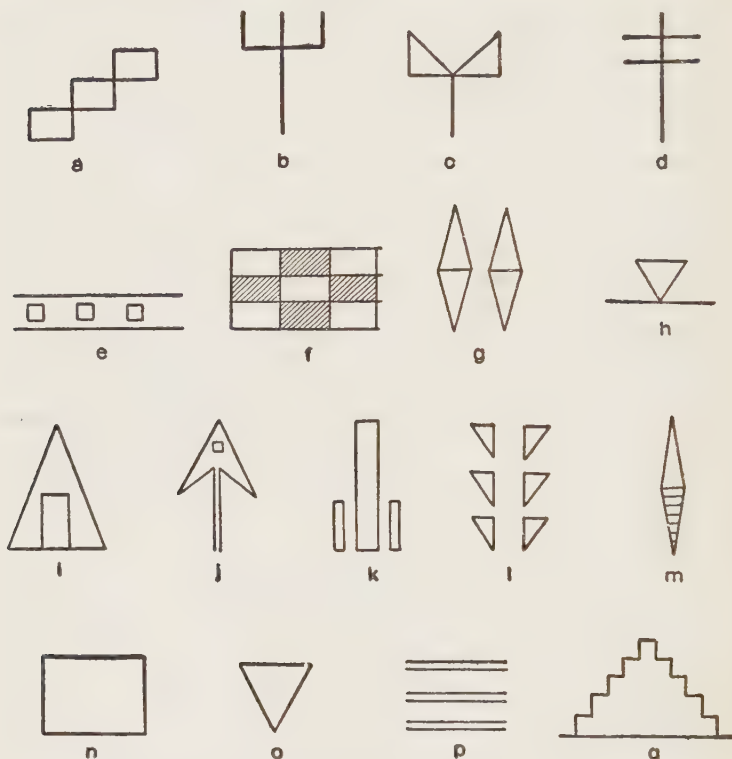


Fig. 41. *A Series of Designs and Their Names, from the Dakota Indians: a, Twisted; b, Full-of-points; c, Forked tree; d, Dragon-fly; e, Filled-up; f, Tripe; g, Feathers; h, Leaf; i, Tent; j, Arrow; k, Three-row; l, Vertebræ; m, Whirlwind; n, Bag; o, Pointed; p, Trails; q, Cut-out*

literature we find "flying goose" designs among the Tlingit, Thompson, Pit River, Maidu, Wintun, and Yurok, but we fail to find these designs identical or even similar. The tabulation of "butterfly" designs gives the same kind of result. The converse of this experiment is to take a single

design and tabulate its names. Thus, the Pomo "quail tip" design is found elsewhere under the names bushes, pine cones, mountains, squirrel foot, and foot. This suggests that we must allow for the borrowing of both designs and names independently, or at least for the former.

Now while this is very good argument against the wide application of the design name theory of origin, it does not by any means prove that in the beginning the decorator did not copy from nature, for subsequent and repeated borrowing would completely disassociate the names. On the other hand, the steady growth of this art would produce a conventional naming system of whose existence we have good evidence in the published studies. Also, the acquisition of textile decoration requires the comprehension of simple steps, or elements, before mastery can be acquired over complexes. It is inconceivable that decorative art began with the most complicated designs and developed into the simplest; and although it sometimes happens that designs do degenerate to mere dots and bars, yet there is no reason for believing that the whole of decorative design was evolved in this way.

Unfortunately, we lack similar studies for pottery decorations, but the objective analysis of certain local types by Fewkes³⁵ gives us ground for suspecting an analogous relation of names and designs. It is clear, however, that in pottery decoration we have different technical conditions; yet, one must assume that beginners would start with very simple forms, as in textiles.

However, in the art of most peoples we find a few designs that rise to the level of true symbols. Among the best known New World symbols are the cloud terraces of the Pueblo peoples and the "whirling logs" or swastika³⁶ of the Navajo. The list is, however, very short, but in addition we find many degrees of symbolic association as among the Arapaho, where current designs were often

chosen by an individual to stand for some personal interests peculiar to himself. Again, not a single case of real symbolism has so far been reported for the many basket makers of California. Its strongest development is in the Southwest which is, perhaps, the center of its northern dispersion. Among the Navajo we note that because of their sacred character the true symbols are not used in blankets, and in the Plains we further note that the conventional and æsthetic relations are practically never modified to meet the demands of interpretation; it is always the latter that is sacrificed. All this indicates that we are dealing with decoration primarily, upon which is occasionally grafted some symbolism. The facts are that practically all

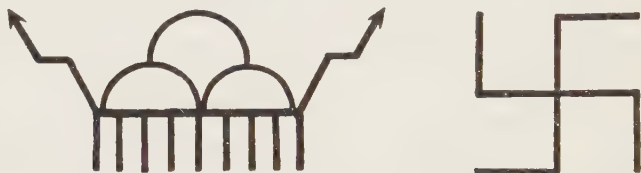


Fig. 42. True Symbols. The first represents the clouds, or "cloud terrace" of the Pueblo Indians; the second, the swastika, or "whirling logs" of the Navajo

of the religious art of the New World is highly realistic and, therefore, stands apart from the art of ordinary decoration.

In conclusion, we may recall our initial question: Is the pattern name at its inception symbolic, or even representative? We can safely say that in most cases it was certainly neither. The suggestion is that symbolic art is primarily realistic, and that many true symbols may be explained as derived from pictures; but true symbols are relatively rare in the geometric designs we have studied and we have consequently no good reason for assuming that many of these as a class were once realistic. In short, the problem is an historical one. We have seen that geometric art is sometimes under pressure from realistic art and perhaps is always so. Hence, the feeling that its designs should be

representative may universally arise and so account for all these design interpretations as secondary phenomena.

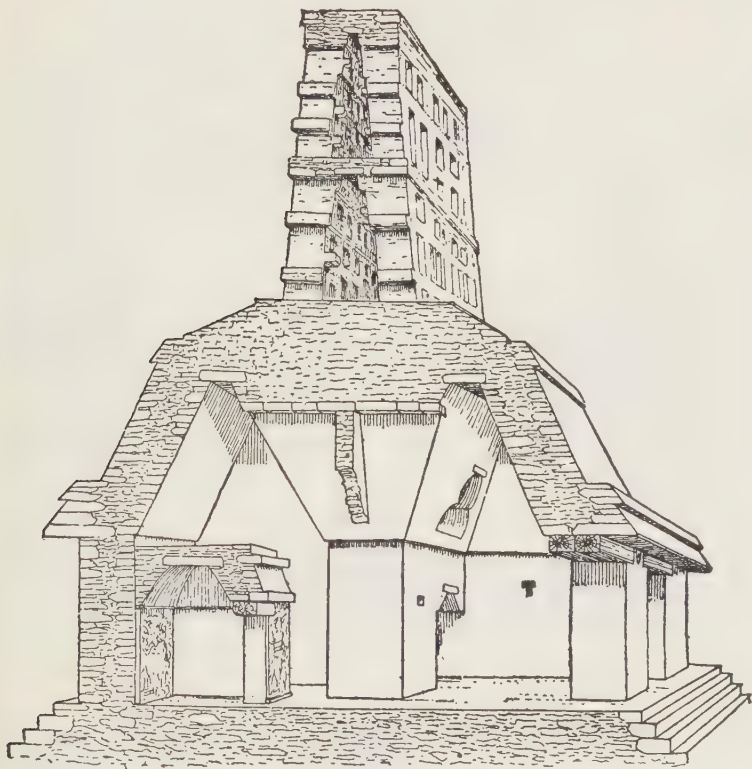
1. Spinden, 1913. I; Kidder, 1915. I.
2. Holmes, 1888. I.
3. Schmidt, 1905. I, p. 330.
4. Kidder, 1915. I; James, 1914. I.
5. Fewkes, 1898. I.
6. Amsden, 1934. I; Reichard, 1936. I.
7. Hough, 1907. I; 1914. I.
8. Fewkes, 1914. I.
9. Boas, 1927. I; Kroeber, 1908. II.
10. Kroeber, 1905. I.
11. Speck, 1914. I.
12. Speck, 1914. I.
13. Boas, 1897. I; 1927. I.
14. Emmons, 1907. I.
15. Boas, in Emmons, 1907. I.
16. Emmons, 1903. I.
17. Swanton, 1911. I.
18. Tozzer, 1907. I.
19. Lumholtz, 1900. I.
20. Spinden, 1913. I, p. 148.
21. Lumholtz, 1904. I.
22. Holmes, 1888. II; MacCurdy, 1911. I; Lothrop, 1926. I.
23. Joyce, 1920. I.
24. Mead, 1906. I.
25. Von den Steinen, 1897. I; Koch-Grünberg, 1908. I.
26. Whiffen, 1915. I.
27. Kroeber, 1925. I.
28. Von den Steinen, 1897. I.
29. Haddon, 1902. I.
30. Boas, 1903. I.
31. Barrett, 1908. I.
32. Wissler, 1904. I.
33. Dixon, 1902. I.
34. Kroeber, 1902. I.
35. Fewkes, 1898. I.
36. Wilson, Thomas, 1896. I; Matthews, 1902. I.

CHAPTER VI

ARCHITECTURE

THE only regions in which building rises to the level of architecture are those occupied by the higher cultures of Mexico and Peru. Roughly considered, there are indications of three centers of development: Maya, Nahua, and Inca, though in last analysis we may find but two, the Maya and Inca, using those terms in their broadest sense. The chief characteristics common to both are rectangular groundplans, massive masonry walls, often of rubble, and the absence of the arch. The last is probably the most important factor, for the clumsy method of a stepped ceiling, closed by a slab of stone, not only doomed the builders to narrow rooms, but required very thick, firm walls for their support. The published plans of the most typical ruins show long, narrow rooms or tiers of rooms, the widest so far reported being 14 feet.¹ That these ancient builders were aware that at best this method of vaulting gave but weak support, is shown by the tendency to support upper stories upon a solid masonry core around which the lower rooms were grouped.² This may also be one cause for the relative infrequency of storied structures and the almost universal practice of securing height and elevation by building upon artificial or natural mounds (Fig. 45). The necessity for narrow rooms no doubt led to the enclosed rectangular court plan, which prevailed both in the North and the South (Fig. 44). Curved or circular walls are very rare and when found are isolated and not a part of a rectangular building. Consequently, we have a plain rectangular contour as a universal character.

Windows are very rare, especially in the north, and the doors are usually rectangular with straight lintels. Colonnades formed with rectangular stone supports are common, and in a few cases we meet with the cylindrical pillar, but it



*Fig. 43. A Cross-Section of the Temple of the Cross, Palenque, Chiapas
Holmes, 1895-1897. I*

did not develop far enough to constitute an architectural feature. Some remarkable feats of masonry are found, and the skill of these ancients in handling cement and transporting huge masses of stone excites our admiration.

In the essential characteristics we have noted, there is little to distinguish between the buildings of Peru and Yu-

catan, though, as we shall see presently, they did have important differences. The present state of our knowledge suggests that all the ruins of southern Mexico and of the

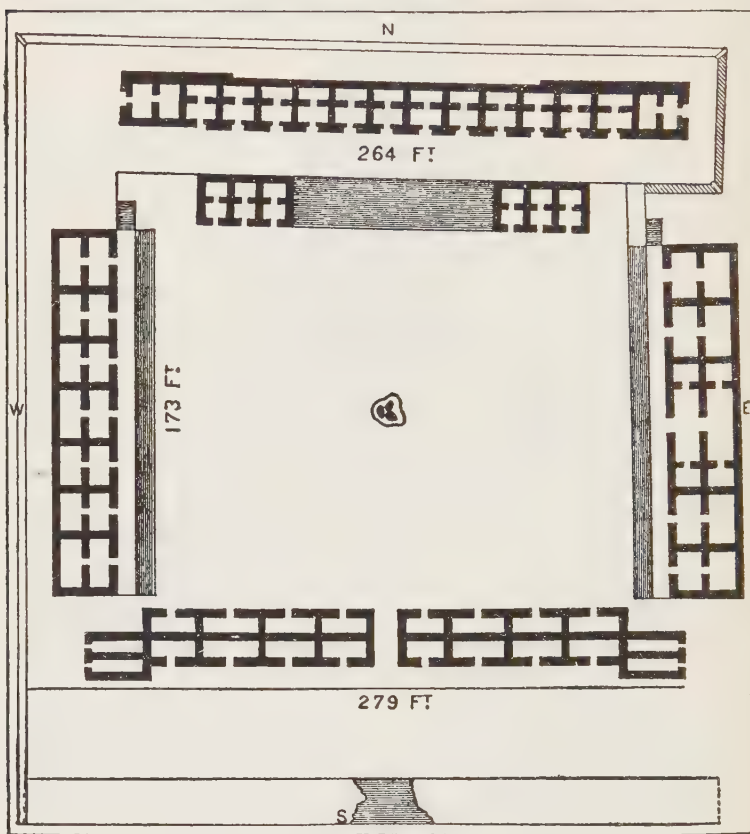


Fig. 44. Groundplan of the House of the Nuns, Uxmal, Yucatan.
Morgan, 1881. I

adjoining Central American states are historically related; but the type seems to disappear toward the Isthmus and reappears in Ecuador. The disconnection of these two centers in the face of their common structural characteristics presents an interesting problem as to how much of this

is due to borrowing. If we take a little broader view, we shall find certain more widely distributed building concepts. First, the pyramidal mound for burial seems to extend from northern Mexico to the Isthmus and then to recur in Colombia, passing through Ecuador and down into the coast of

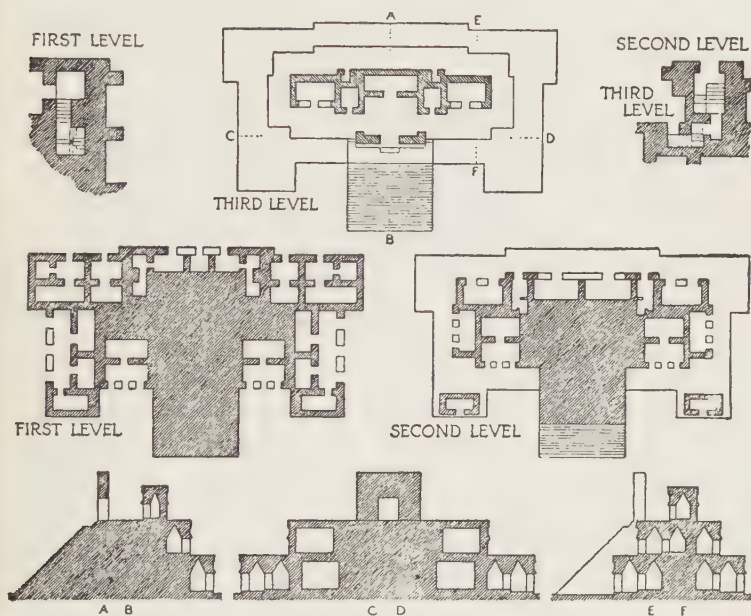


Fig. 45. Elevations and Groundplans of the Ruin Known as Santa Rosa Xlabpak, Yucatan. Spinden, 1913. I

Old Peru. At least in one part of the Inca domain we find buildings upon them. In fact, their general absence in Old Peru is accounted for by the rocky nature of the country, which affords sites of natural elevation to which buildings were frequently adjusted by terraces.³ It may be of interest to note that the pyramid mound both for burial and building sites extends up into the Mississippi Valley as far as the famous Cahokia of Illinois, and that this distribution is continuous with the general mound area of the upper valley. In other words, the occurrence of mounds of this type has a

generally continuous distribution from the Great Lakes of the North to the coast of Old Peru of the South. Throughout, they are most numerous in level districts.

The northern limits of building attributed to the Nahua are on the Gulf Coast about the 24° of latitude, or in striking distance of the Rio Grande. Though all the later northern buildings are far less preserved than those of the older Maya, they seem to have one suggestive difference, the absence of the vaulted ceiling and the consequent increased size of rooms. The roofs were probably flat and supported by beams resting upon internal pillars where necessary (Fig. 46). It seems strange that the Maya did not make more use of wood, but the Nahua style reminds us of Pueblo architecture, where beams of wood support the ceilings and roofs.⁴ Thus again, we have an interesting case of continuous distribution. It is certain that the large and imposing ruins did not house the bulk of the population. The surviving examples show that the prevailing habitation was a small, rectangular one-room house whose essential structure, when of stone or adobe, was the same as found in the several units of the so-called palaces and temples, except that the roof was thatched. In Peru, the roofs were often supported by ridge poles which would give us about the same interior effect as the stepped ceilings. The walls of the houses take three forms, all of which may be encountered on either continent; namely, stone, adobe and mud reinforced with canes or wattling. Studies among the Pueblos of New Mexico have indicated that when we know more of that area we shall find a period of single detached adobe and stone rectangular houses preceding the composite pile of the modern pueblo. In fact, the Pueblo Indians of the present show a disposition to revert to the detached house, which does not materially differ from a single unit in the village structure. In like manner, we find in Peru a grouping of single houses around a court so as

to form a complete enclosure, and the groundplan of these is not essentially different from those of the preceding structures. Similar conditions have been reported for the Maya district.⁵

We see, then, that in at least two particulars we have a broad cultural base for the highly specialized building arts of the Maya and Inca. That all these widely distributed characters result by diffusion from these two centers is

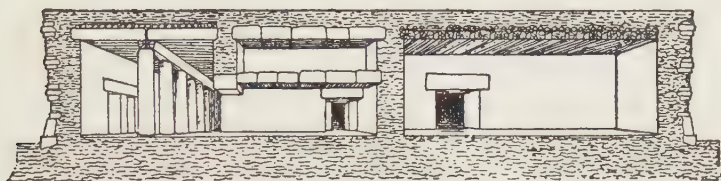


Fig. 46. Restored Section of the Hall of the Six Columns, Milla, Mexico. Holmes, 1895-1897. I

scarcely logical, for even cultures are not built of nothing, but all have a long train of historical antecedents. It is much more reasonable to assume that diffusion, and perhaps other factors, brought a certain extended uniformity in house-building before the final burst of higher culture in these two centers. Granting that in this burst they may have been independent, they nevertheless had the same heritage from which to fashion their art.

One argument for their independence is to be found in the secondary decorative features. In this respect the northern buildings are far in the lead. The embellishment of the façades is often intricate and full round sculptures are let into the walls by tenons; stucco reliefs are built out upon rough skeletons of stone work; and elaborate mosaics of separately carved stones are arranged so as to make grotesque faces, as well as geometric patterns. A special feature is the use of monolithic monuments commonly called stela, placed around and among buildings, the surfaces of which are richly carved with pictographs and hieroglyphs.

The exterior and inside ornamentation was often painted in a very skilful way.

When we turn to Peru, such monuments are conspicuously absent and the exteriors of the buildings are, in the main, plain.⁶ Still, we have an approach to it in the celebrated stucco walls of Chanchan, bearing an elaborate textile design, and in the inland we find traces of painting upon smooth stucco, suggesting that there was a great deal of such ornamentation that has disappeared. Then we have a few noted monoliths, as the Chavin stone and the very remarkable gateway at Tiahuanaco. To these may be added the curious sculptures at San Agustin, Colombia. Both the stucco and the monolithic carvings have a certain general resemblance to those of the Maya, but on the other hand, they have great differences. It is also noticeable that they have their counterparts in the textile and ceramic art of their respective localities. Yet, the distinction remains, that secondary embellishment, or what is often considered true architecture, is characteristic only of the Maya type.

Associated with the foregoing culture were no less worthy feats of highway and drainage construction, particularly by the two great military cultures, the Nahua and Inca. In Peru, roads were paved and graded and brooks spanned by stone culverts, many of which are still in use.⁷ These were necessarily formed by huge stone slabs supported by piers. Chasms were bridged by true suspension bridges and in some cases crossed in chairs running on cables. Even a kind of pontoon bridge was in use. In Mexico, the country was less rugged, but the roads were excellent. In both regions the irrigation and aqueduct systems are famous. As all travel was by foot, and only in Peru were pack animals used, these road builders had a somewhat different problem than confronted the users of carts in the Old World.

As we proceed southward in Peru, architecture rapidly deteriorates, disappearing altogether at the River Maule.

Thence toward the east in the neighborhood of the Calchaqui, we find rough stone structures of many rooms, not unlike one-story pueblos. Burial is now in urns without true mounds, but many small carved monoliths have come to notice. Once out into the guanaco area we find the simplest kind of skin tent, which in the far south becomes merely a windbreak. Throughout the Amazon, on the north coast and southward as far as the Suyas, hammocks are in general use and the houses are frequently primitive. On the other hand, very large thatched structures are found, under which, as under one great shed, lives the whole community. So far, there seems to be no consistent distribution of varieties of this type, some are oval and well thatched, some square, and some mere roof shelters. In fact, the only thing essential is a hammock to keep one off the ground and a roof overhead. The whole population is rather nomadic. As we go eastward through the highlands of Venezuela, the court structures of Colombia disappear, but still the prevailing form is the rectangular hut; but in Guiana we begin to encounter the oval thatched house of Brazil. Of some interest are the pile-dwellings of the north coast, now almost extinct, though a few survive in swamps and even on dry land. In some of the inundated districts floating houses are found. Finally, the meager archæological data we have reveal only one important site at the mouth of the Amazon where mound structures have been reported.

The structure of habitations in the United States and Canada has been carefully studied so that we can make very definite statements as to the types and their distributions.⁸ Nowhere outside of the frontier to the Pueblo area do we find buildings of stone until we reach the Eskimo. Consequently, there is very little content to the archæology of architecture, our data being almost exclusively from the surviving tribes. The only building that reminds us of the traits we have discussed in our consideration of the area

of intense maize culture was found in the lower Mississippi Valley, a rectangular house with walls of clay reinforced by wattling. Sometimes, as in Arkansas, there were two or three rooms suggesting the houses of Colombia, but these were not the prevailing type on the lower Mississippi.

The Gulf States form a fairly distinct house area. Particularly on the Atlantic side were curious oblong rectangular houses with curved, or bowed, roofs. Their construction was simple, a framework of light poles, lashed into place, with coverings of bark or thatch. (For type illustrations see the *Handbook of American Indians*.) In the Florida swamps a kind of platform pile-dwelling is found, with roof and open sides reminding one of Guiana types. A very widely distributed structure is an oval dome-shaped house, plastered over with mud, with no opening except the door. In fact, none of these southern houses seems to have been provided with smoke holes, most of the cooking being done out-of-doors.

In northeastern United States the prevailing form among the Algonkin tribes was a low, oval framework of poles covered with bark, mats, or thatch, according to the season and locality. The Iroquois of New York, who are generally regarded as of southern origin, lived in long, rectangular, bark-covered communal houses known in local literature as the "long-houses."⁹ The structural similarity of this to one of the southern types is obvious. West of Lake Michigan the dome-shaped Algonkin house often gave way to a rectangular one with a flat roof, and among the Eastern Dakota we meet with this form made by setting up rows of posts in the ground. A little farther west on the Missouri we have what is usually called an earth-lodge, a circular, conical-roofed framework covered with thatch and finally with turf.¹⁰ However, its distribution is restricted in the main to Caddoan and Siouan tribes of bison hunters, who also raised some maize.

Next, we have a well-known type of shelter to which the Dakota name, *tipi*, is usually applied. In the east, it appears in northern New England, extending up into Labrador, thence eastward through the great Cree and Ojibway range, well up into the Canadian Northwest. Also, it sweeps down into the bison area, reaching some of the nomadic peoples of the Pueblo area and again invading the salmon area in Oregon and Washington. The other forms of shelter we have noted have all but disappeared, while the *tipi* is still used by the surviving tribes of this great area. These conditions tend to make it the most typical Indian shelter, and it now has so firm a place in the popular mind that it is used in art and story, regardless of the locality. Not infrequently we see pictures of Pocahontas, Henry Hudson on Manhattan, and even of California incidents associated with *tipis*, a form of shelter entirely inappropriate. The term wigwam in Colonial literature is the Algonkin name for the oval bark-covered house we have described, and the modern tendency to apply the same name to the *tipi* has led to great confusion.

It is not to be expected that we shall find a single type of *tipi* prevailing throughout. The essential structural concept is a tripod of poles, supporting other poles forming a cone.¹¹ The base tripod is formed by binding together three or four poles, but in far western Canada these poles sometimes have interlocking forks, a feature also noted in southern Nevada and in the older type of Navajo hogan. Where birch trees grow, the cover is birchbark; in the bison area it is skins. The Ojibway, however, often used mats, as was sometimes the case on the Columbia River. In the far North, we find a pointed skin tent, even forming a summer dwelling for the Eskimo.

For the details of varieties of *tipi* and their distribution we must refer the reader to the special literature. We note that it seems to follow the outlines of the caribou and bison-

hunting areas and is everywhere definitely associated with a nomadic hunting life, for many tribes on the borders used it only when on hunting trips. Its origin and development, therefore, is one of the important problems in our subject and must receive close attention in the future. Curiously enough, the *tipi* is found in Siberia and has analogous forms in northern Europe, suggesting the possibility of its definite association with reindeer culture.

We have now covered the whole of the northern continent except the western part and the Arctic. The most distinctive structures here are the wooden totem-pole houses of the North Pacific Coast, reaching their highest development among the Haida and Tlingit.¹² The structural plan consists of four massive, upright timbers supporting two long, equally heavy beams. These are placed parallel about four feet apart and are essentially ridge poles. Around these a rectangular enclosure is made by setting split planks upon end. The ends are gabled and the roof of planks. The only framework is the massive central support, in contrast to which the remainder of the building appears flimsy in the extreme. But we find one feature not so far observed north of the Nahua area, namely, architectural embellishment. The four interior posts are carved in high relief, and outside is the famous totem pole. Paint is used to reinforce the carving, and in addition the front of the house is decorated with one of those curious spread-out animal forms we have noted in the preceding chapter. Had these people carved in stone instead of wood, we should now find their country one of our richest archaeological fields, but the perishable nature of their building material has left no records of their past history.

The influence of this type of architecture reaches northern California, for though the heavy carved timbers have a central distribution only, we find the rectangular house of upright planks, with a circular door throughout the coast!

belt of Oregon and Washington. In Canada it invades the mountainous area of the Déné, but in Alaska it stops rather suddenly. In general, then, the distribution of this type of house lies in a narrow belt along the Pacific Coast, stretching from northern California to the Copper River in Alaska.

Central and southern California present simple but various forms of shelter.¹³ Yet, they may be characterized as shelters of brush and tule reeds. More permanent houses are sometimes formed by setting up poles over slight excavations. Toward the interior we meet with the margin of the great Shoshoni linguistic area, the characteristic shelter of which is a simple brush-covered lodge. Two forms occur, the precise distribution of which is not yet known, but the prevailing one seems to be a low dome-shaped, grass-covered affair still encountered among the Comanche and the Apache. The other type we have mentioned is a pointed brush shelter upon a tripod of forked poles, a form closely allied to the Navajo hogan and perhaps to the *tipi*.

Strictly considered, none of these houses so far described can be classed as underground. Yet, some approach this qualification in that they have sunken floors. However, in the interior, skirting the coastal belt for rectangular houses, from the southern tip of Alaska on the north to San Francisco Bay on the south is a belt of semi-subterranean houses entered through the smoke hole by a stepped ladder.¹⁴ This type seems to center among the inland Salish of British Columbia and Washington. Because of this peculiar distribution one may suspect the Salish as chiefly responsible for the phenomenon. The next place where we encounter a subterranean house is among the Eskimo of Alaska. In this case we have two ways of entering: through the smoke hole and by a long covered trench, each used according to the season. The Eskimo house, however, is often set over a very shallow excavation and earth heaped

over its framework like the earth-lodge of the Missouri. This form of house extends eastward beyond the mouth of the Mackenzie, but from there on timber is too scarce. Stone houses were noted by Stefánsson near Coronation Gulf, and their distribution from that point eastward seems to be continuous. Their roofs are usually of skins, often supported by whale ribs. The snowhouse we all know so well is universal from east to west as a temporary residence, which in summer gives way to a small skin tent. Its long, low, tunnel-like entrance and internal arrangement is the same as that for the earth-covered type of Alaska, and both together may be regarded as revealing the characteristic Eskimo house concept.

Jochelson¹⁵ has brought together some data for a historical connection between the earth-covered houses of the Old and New Worlds. While it is clear that examples of such dwellings are found intermittently from Europe, across Asia, to America, we do not find the definite structural parallels necessary to form satisfactory conclusions regarding their historical relations. Archæological work has brought to light a somewhat more extensive distribution of such houses in America. Numerous depressions in the upper half of the Ohio Valley have been regarded as old house sites and recently Sterns¹⁶ located rectangular house pits in Nebraska, but, except in the last case, our knowledge is not definite, and the very perishable nature of the structures so far observed makes further discovery extremely difficult.

The explorations of Kidder and Guernsey in the adjacent parts of Utah and Arizona reveal an ancient type of pit dwelling that promises to have a genetic relation to the *kiva*, or circular underground ceremonial chamber of southwestern United States.¹⁷ The American data upon the distribution of the various kinds of pit dwellings have recently been reviewed by Waterman.¹⁸ However, in all these discussions the tendency is to call every shelter in which the

floor level is below the surface, a pit dwelling, even in cases where this is obviously due to the necessity for removing a few inches of the root-infested soil to secure a hard, wearing surface. One must suspect, therefore, that progress in this comparative problem will await the detailed study of special areas in which full account is taken of minute details in structures, rather than correspondences to generalized architectural characters.

A similar problem deserving investigation is the lean-to type of shelter which is quite characteristic of the great Northwest of Canada and again of the extreme southern part of South America. Some recent travelers have brought out information as to the use of such shelters by the more primitive tribes in parts of British Columbia. One is tempted to see in the lean-to the parent of the *tipi*, the Navajo hogan, and many other New World types. A careful study of these types, therefore, seems worth while.

In conclusion, attention may be called to one peculiarity of aboriginal house construction. The chimney was unknown. Not even the skilled architects of Mexico and Peru seemed to have hit upon the idea. It is true that in the historic pueblos they are found, but this is generally attributed to Spanish influence. In the older type of pueblo structure only the rooms having open roofs were used as living quarters. Hence, the universal American way of heating a house is by an open hearth at the center with a hole in the roof immediately above.

Under the general head of architecture we may also consider earthworks, mounds, circles, etc., even though it is unusual to so associate them. As we have noted, it was the custom in the area of intensive maize culture to place temples and similar structures upon mounds, if no natural eminence was at hand. Something like this was observable at the period of discovery in southeastern United States, where the natives erected council houses and even dwellings

upon raised platforms, or mounds of earth. However, we find widely diffused over the lowlands of the Mississippi Valley thousands of burial mounds, or tumuli. These are usually of moderate size, often covering but a single burial. Yet we not infrequently meet with very inspiring works containing many interments and, in the few cases where systematic excavations have been made, showing by their internal structure that the whole had been gradually built up by adding earth for each successive burial.

In addition to these tumuli we find variously distributed a relatively small number of earthworks of more specialized types. Particularly in Wisconsin we find numerous small works in the unmistakable forms of animals and men. Such are occasionally met with elsewhere, the most conspicuous example being the great Serpent Mound in Ohio, which has no parallel in the whole world. Conspicuous among the unique earthworks are the great truncated mounds at Cahokia, Illinois, near St. Louis, again at Vincennes, Indiana, and the Etowah Mound in Forsyth County, Georgia. Circular and rectangular enclosures are sometimes met with, particularly in the Ohio Valley, while another conspicuous type is the enclosure upon a flat-topped hill, to be noted under fortifications.

In general then we see the burial mound and occasional associated earthwork are characteristic of the Mississippi Valley and that with respect to distribution they seem to center there. On the other hand, there are certain gross resemblances to structures and methods prevailing in the area of intensive culture, but until our knowledge of both areas is more complete one guess is as good as another. It is to be hoped that each of the States in the Mississippi Valley will carefully work out the classification and distribution of earthworks within its borders to the end that we may be able to see the phenomenon in its true setting; especially since these mounds and earthworks have always

been objects of great popular interest and the term mound builder has a fixed place in general literature. We see here, however, that mound building appears as a trait of culture and no more requires a distinct race for its explanation than does the existence of maize or tobacco. On the other hand, these earth structures present a problem of almost equal importance, since they are by far the most outstanding and impressive archæological specimens to be found in the eastern maize area of North America.

Fortifications may also be considered under the general head of architecture. At the time of discovery the native villages in the southern half of the eastern maize area were circled by palisades. In the north, the Iroquois possessed such fortified towns and even in New England they were known.¹⁹ It is now considered that certain rings of earth in New York State mark the sites of palisaded villages, and there is reason to believe that similar redoubts in the Ohio Valley had a like origin. The palisade was used as far up the Missouri as the Mandan villages. In fact, the distribution of palisaded villages is about coincident with maize culture in the east. The only other place for which palisades are reported is the North Pacific Coast, though the usual form in that region was a high rock with overhanging platforms like a blockhouse. Nowhere else do we find fortifications until we reach the Pueblo area. It is true that a number of earthworks are designated as forts, but their use as such is largely hypothetical. Perhaps the best-known example is Fort Ancient in Ohio, which is one of the most imposing earthworks in the world. In the Pueblo region the houses were so placed, either in cliff recesses, upon mesas, or piled upon each other in such manner as to make other defensive works unnecessary.

In the Antilles and eastern South America the palisaded village was known, but we have no record of other kinds of defensive works. It is, however, important to note that

we have here a continuity of at least one trait for the eastern halves of both continents.

Naturally the great military empires of Mexico and Peru developed fortifications. In the former, the road from Tlaxcala to Mexico City was defended by a stone wall about six miles long, faced by a ditch.²⁰ The internal citadel of the defense works at Mexico City was about the temple of Tenochtitlan, surrounded by a wall six feet high, where the last stand against Cortez was made. Strange to say, the great ruined cities of the Maya show no definite fortifications. It is, however, in the Inca territory that the greatest systems of defense appear.²¹ Important points on roads were guarded by blockhouses, cities were defended by systems of outlying forts, etc. The most famous fortresses are Ollantaitambo and Sacsahuaman. The latter is distinguished for its remarkable masonry and the former for its internal passages cut in solid rock.

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| 1. Spinden, 1913. I. | 12. Emmons, 1916. I. |
| 2. Holmes, 1895-1897. I. | 13. Kroeber, 1925. I. |
| 3. Joyce, 1912. I. | 14. Waterman and Collaborators, 1921. I. |
| 4. Holmes, 1895-1897. I; Thompson, J. E., 1933. I. | 15. Jochelson, 1907. I. |
| 5. Thompson, E. H., 1911. I. | 16. Sterns, 1915. I. |
| 6. Joyce, 1912. I. | 17. Kidder and Guernsey, 1919. I. |
| 7. Markham, 1910. I. | 18. Waterman and Collaborators, 1921. I. |
| 8. Morgan, 1881. I. | 19. Willoughby, 1935. I. |
| 9. Morgan, 1881. I. | 20. Joyce, 1920. I. |
| 10. Fletcher and La Flesche, 1911. I; Spinden and Will, 1906. I; Wilson, G. L., 1934. I. | 21. Markham, 1910. I; Means, 1931. I. |
| 11. Wissler, 1910. I. | |

CHAPTER VII

WORK IN STONE AND METALS

It is frequently said that the whole of the New World was at the time of discovery still in the stone age. This is an unjust estimate of the metallurgic development in Mexico and Peru, but is true in a certain sense, since some stone tools were still in use even at the most advanced metallic centers. Outside the region of high culture the characterization holds and, even at the present moment, stone age culture survives among a few outlying remnants of the aboriginal population. The gradual displacement of stone tools by trade gave opportunities for the actual observation of their fabrication paralleled in no part of the continental Old World. For, although we have from western Europe a remarkable chronological series of stone implements in which it is believed the several steps in their development can be differentiated, it is practically impossible to tell exactly how the work was done. Since we find in America somewhat analogous forms made from similar materials, the tendency has been to interpret European specimens by American data.

In Europe we find one distinction not at all applicable to our subject. Stone work there is clearly divided into two successive periods, that in which chipping alone occurs and that in which polishing predominates; while in practically all parts of the New World we find the two processes in simultaneous use. In the main, the stone industry of every social group comprises the following different methods: chipping, or flaking; abrading, or pecking; grinding and polishing; sawing and drilling.

The process used is dependent upon the materials. Thus any stone like flint, which has the property of conchoidal fracture, is flaked. While the precise manipulations seem to differ according to locality, the essential procedure is everywhere the same. A pebble is first brought to a generalized or blank form, by striking with a hammerstone. From this the desired implement is worked out, the fine chipping being by hand pressure with an antler or bone blunt-pointed tool. Holmes,¹ our leading experimental archæologist, has worked out in his laboratory many of the



*Fig. 47. Pebbles Showing the Process of Abrading, or Pecking.
Boas, 1909. I*

necessary processes, which, in the main, agree with those observed among living peoples.²

For pecking, our best data are from the natives of Vancouver Island, who occasionally resorted to it as late as twenty-five years ago.³ As shown in the figure, parallel grooves were battered in the pebble to be shaped, then the intervening ridges pecked away, and so on. The battering tool was a long, oval pebble of tough, hard stone. When the approximate shape of the desired implement had been attained, it was finished by grinding on suitable stones.

This seems to have been the method employed wherever

polished tools of similar materials have been found. But nephrite, the fine, green, jade-like stone found on the North Pacific Coast and in Central America, cannot be worked in this way. It can only be cut and ground. Again, our best data are from Canada and Alaska. The Eskimo success-

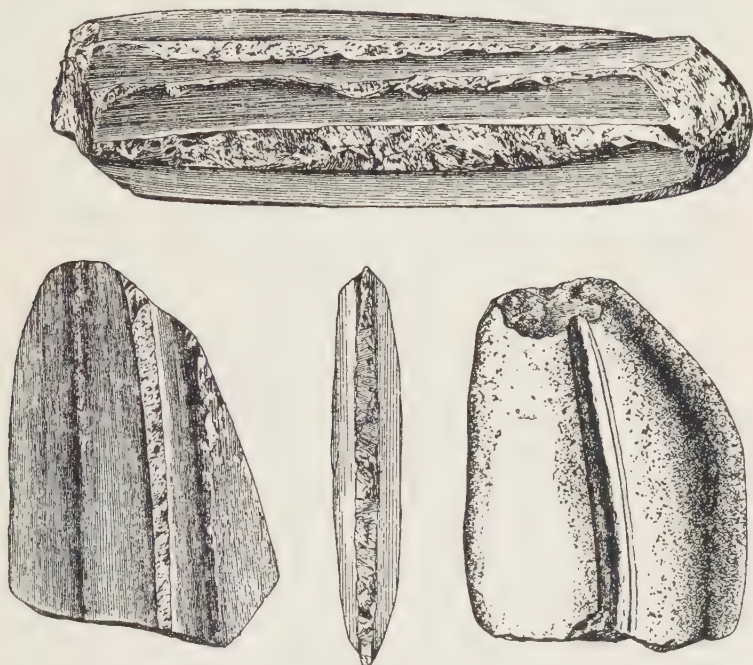


Fig. 48. Pieces of Nephrite Showing the Method of Cutting and Breaking. Smith, H. I., 1899. 1

fully sawed off pieces of the required shape by the use of thongs and sand and water; in short, the same principle as is employed in modern stone cutting. From unfinished pieces in collections and the fine examples unearthed by Smith,⁴ it appears that the final separation of the block was by fracture produced by wedging.

As to drilling and perforating, our data are less complete. Soft stones, like slate, were drilled with stone points. By

experimental methods Rau⁵ has reconstructed the process of drilling with a hollow reed and sand, which accounts for the unfinished borings with attached cores we sometimes find in museums. Again, the natives⁶ made large perforations by pecking. First, a pit was formed in the stone to be perforated, into which a hard pebble was laid and pounded upon until the hole reached the middle; then the stone was inverted and the process repeated.

The fine sculptures of the Maya were executed with stone tools. We can safely assume, therefore, that all the stone work of the New World belongs strictly to a stone age and was such as could, and in the main was, accomplished without the use of metal tools.

TYPES OF ARTIFACTS

Our next task is to enumerate the most distinctive types of stone artifacts and their respective distributions. The most universal is the arrow-head, which, though of many varieties, tends to take the generalized triangular form. The notched head is found in both continents, but is strikingly absent from Eskimo collections. By paying minute regard to size, secondary form, and materials, it has been possible to draw some distinctions between the arrow-heads from different parts of the two continents, but such study has not advanced to a point where a summary can be made.⁷ The fact is that the difficulties of observing consistent distinctions are so great as to be discouraging. Nor do we find any great divergence from the arrow-heads of the Old World, for somewhat similar notched forms are common in Neolithic deposits. On the other hand, the fact that they do not occur in Paleolithic culture may have a significant bearing upon the history of our continent.

Lance heads and even knives are often indistinguishable from arrow-heads except as to size. Another closely related instrument is the drill. If we add to these, scrapers and a

few gravers, we about exhaust the list of analogous tools.

Chipping, in particular, lends itself to fanciful productions and we often find in our collections from both continents many unusual objects. This work has been greatly stimulated by the modern tourist trade.

While the celt and the gouge from America cannot readily be distinguished from those of Neolithic Europe, or any other part of the world, the grooved ax (Fig. 62) is so far unique, though a single specimen has been found in China.⁸ Yet its distribution in the New World is rather restricted,

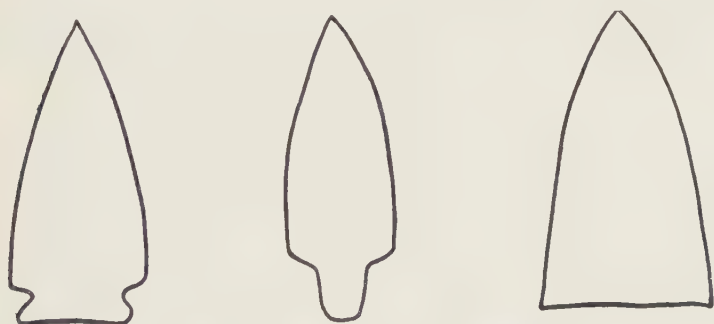


Fig. 49. Common Types of Arrow-Head

even if we include all implements hafted by a groove. For we find this grooved ax to be rare in South America, so far having been reported only for Ecuador. In North America the grooved ax is not found on the Pacific side, but is first met with among the Pueblos and bison-hunting tribes, though with the latter it is usually a hammer that is grooved. In the eastern maize area it is frequently met with. In Mexico and Central America it is relatively infrequent, and in the Greater Antilles is not found at all. On the other hand, neither the Eskimo nor the Siberians seem to make use of this principle of hafting.

The highly developed tribes of the North Pacific Coast use a grooved hammer, but in some cases a transverse hole is made, through which the binding is run. The important

principle in hafting here is the holding of the flat face of the tool against a similar surface on the end of the handle, as in the adze. Curiously enough, this method has a distribution not quite the same as that of grooved tools. In Siberia, Alaska, and on the North Pacific Coast, where the adze is common, hammers are hafted in this same way, but in the Pueblo and Plains regions the tendency is to twine the handle around the entire tool. Then, in the eastern maize area the grooved ax again bears the hafting shoulder, as also seems to be the case in Ecuador.

That east of the Mississippi, celts were hafted and used as axes is clear from a few specimens found in swamps.⁸ In these cases, the wedge-shaped top of the celt is put in a hole through the wooden handle.

The other most important group of tools is that passing under the name of knife. From the Eskimo, particularly in Alaska, we have a knife for carving formed by setting a small flake in the lower edge of a bone handle. Similar knives have been found along the Upper Missouri,¹⁰ the significance of which is not clear. Among the Eskimo on the North Pacific Coast, and in the northern part of the eastern maize area, we find knives of slate, a material which takes a very keen edge, but does not wear well. The semi-lunar knife of the Eskimo is usually of slate and is found in the St. Lawrence Valley as well. In Peru, we find the same form in copper and bronze. Chipped blades were used as knives in all parts of both continents. The large, fine, obsidian blades of Mexico are the most famous.

An implement of unique character is the pitted hammer-stone, the precise distribution of which cannot be stated.¹¹ The stone pestle is essentially a hand hammer, and is found in all parts of the northern continent, except possibly in the heart of the bison and caribou areas. Detached stone mortars are a feature of the Pacific Coast, though in California they are usually mere holes in large boulders. In the

interior and the east stone mortars are rare. Both in the Plains and in California, we find flat stones with skin and basketry hoppers, respectively. In the eastern maize area the mortars were usually of wood, as also in eastern South America.

A particularly characteristic object in the culture of the New World is the stone pipe, the forms and distributions of which have been extensively treated by McGuire.¹² In the main, there are two types of stone pipe, the common or elbow form, and the tubular pipe. The former has a wide distribution over the eastern half of the United States, extending into Canada and northwestward to the Pacific. It does not occur with any frequency in the West Indies and northern South America, but is fairly abundant in eastern Brazil and Argentina. The tubular stone pipe, on the other hand, is found in the western part of the United States and is the exclusive form in the highland region from British Columbia to the Rio Grande; it is even occasionally met with in the Mississippi Valley. However, in Arizona and New Mexico, it begins to give way to the tube of cane which prevails in Mexico and Central America (Fig. 6). The center of development for highly carved stone pipes is the eastern half of the Mississippi drainage.

Of special and frequently problematical stone objects we have a long list. In North America, the bannerstone and the discoidal are common on the Atlantic side. The Columbia River Valley also presents a large number of curiosities, such as stone weights, tool handles, monkey heads, etc., perhaps a greater variety than any other region. In the Antilles we have large, curious rings or collars, and in Mexico, yokes. Central America yields carved jadeite celts and animal-shaped metates. From Ecuador come large stone seats and from Peru curious carvings in stone, suggesting appliances for a game of chance. The small area about Catamarca, Argentina, produces a curious mace-like object and

in eastern South America we find a large, finely formed ax. The distribution of these forms presents many interesting problems for which the reader must turn to the special literature.

Among questions of wider interest is that of steatite work. The making of steatite vessels was a prominent industry on the Atlantic side of North America. In New England and Virginia, as well as elsewhere, aboriginal quarries are found, together with tools and vessels in all



Fig. 50. Knives of Copper from the Eskimo of North America and the Inca of Peru, respectively

stages of completion, giving us a complete view of the industry. The art is also highly developed among the Eskimo of the east. The apparent former southern extension of the Eskimo into New England raises the question as to a possible historical relation between them and their Indian (Algonkin) neighbors, which, while not altogether probable, deserves study. Again, on the Pacific Coast, especially in California, we find large, globular vessels and other forms.

In closing, it may be noted that in the New World is the place where we get the most complete data as to the meth-

ods of hafting stone tools. While in Neolithic Europe axes were perforated, as is still the case with us, no such method was known here. It is true that a few South American forms were drilled, but not in a way to permit of similar hafting. Even the metal-using aborigines of Mexico and Peru simply set the blade into a mortise in the handle, suggesting that the hafted celt was the original and most fundamental New World ax form.

When we examine the total distribution of the stone objects we have discussed, we find them not particularly numerous in the caribou and bison areas of the north and the guanaco and Amazon areas of the south. This may, in part, be due to lack of systematic collecting, especially in the Amazon country, but in the remaining regions we have the great hunting areas of the New World where bone is the prevailing tool material. For example, the Déné tribes of Canada seem to have used stone very rarely, even their arrows were tipped with bone. Likewise, antler-tipped arrows were very common in the North Atlantic states. Among the bison hunters, bone points were also in general use, though stone was not unknown. The use of bone awls, wedges, drills, knives, and even celts were common in all these hunting areas.

Collections from excavations in Alaska and from the vicinity of New York Bay give us sufficient samples of unfinished bone and antler objects to indicate the processes by which these materials were worked. These processes were about the same in the two areas: linear pieces were removed by grooving and breaking; cutting was by sawing or hacking deep notches, then breaking. On the whole, the art seems most intense among the Eskimo, and in comparison with North America, the southern continent appears rather weaker in bone work, particularly in the simpler culture of Tierra del Fuego. Again, in the Antilles we find the thick part of shells used for making celts and other tools.

Of ornaments, pendants, and beads, there are great varieties of various materials from both continents. Even pearl beads were extensively used by the Ohio mound builders.

MINES AND QUARRIES

Under the general head of materials dug from the earth, we have an important series of archæological topics. Notwithstanding that many of these aboriginal mining operations must have survived well down into the period of colonization, none was carefully observed by explorers. In the United States and Canada, copper, cinnabar, ocher, salt, alum, clay, steatite, flint and other flakable stones, catlinite, turquoise, coal (for making ornaments), and mica were dug out. Practically all such operations were confined to the eastern maize area and the Pueblo habitat. South of the Rio Grande, gold, silver, and copper, and in the Andean region, gold, copper, tin, silver, and platinum were worked. Here also, stone-quarrying operations were extensive, but outside of the Andean highlands we have practically no evidence of mining or quarrying in South America.

Archæological interest centers chiefly in flint workings and copper mining. In the case of the former, we have sites where a large part of the surface has been dug over for quartzite and other nodular forms. Of such sites the best known is that studied by Holmes at Washington, District of Columbia.¹³ The most extensive diggings seem to be those explored by Smith in Wyoming, which appear as part of a chain reaching into Oklahoma. Other noted sites are Flint Ridge, Ohio; Mill Creek, Illinois; Hot Springs, Arkansas; and two in Pennsylvania. In some of these the pits reach a depth of twenty feet. The natives usually worked out the "blanks" on the spot, leaving behind a great mass of chips among which the archæologist finds many rejects and abandoned forms.

Some fairly successful attempts have been made to trace

the materials of which stone implements are made to particular known diggings, from which it appears that the natives made long journeys for this purpose. The method has, however, not been carried far enough to bring definite results. Some recent studies for the lower Hudson show that we have here a very important method from which much may be expected in the future.

Outside the regions of high culture the only important copper workings were those of Lake Superior. Free copper was gathered in many places, particularly, west of Hudson Bay and in Alaska, but no evidences of extensive mining have come to hand for these sections. As just stated, very extensive workings have been noted at Lake Superior, from which stone hammers to the weight of twenty-six pounds have been collected in the ancient pits; in one instance a wooden shovel, a bowl and a ladder were recovered. The aboriginal method of taking out the virgin copper seems to have been cracking by heat, breaking and wedging. In one pit twenty-six feet deep a six-ton piece of copper had been worked out and raised five feet on an incline of logs by wedging; most of the supporting timbers and wedges were still in place.¹⁴

Some copper may have been mined in the Pueblo region before Spanish days, but we have no data as to methods. Our knowledge of operations in Mexico and Peru is equally vague, though here they must have been prosecuted on a far larger and more systematic scale.

METAL WORK

Lake Superior copper needed but to be beaten into shape and was, therefore, an ideal primitive metal. Particularly in Wisconsin we find copper duplicates of the most important stone tools, which are less intensively distributed over the whole of the eastern maize area. However, in the immediate vicinity of the mines, we encounter a few depar-

tures from stone tool models, suggesting that the copper-working art had begun a development of its own. The most curious of these is a socketed ax reminding one of certain bronze axes found in Europe.¹⁵

No satisfactory evidence of casting or even beating in dies has been found for regions north of Mexico. Ingenious experiments by Cushing¹⁶ and others have demonstrated the possibility of making all the objects so far found here with the most primitive tools. Stefánsson¹⁷ collected specimens from Coronation Gulf, showing long, slender rods fashioned by beating together thin sheets of copper.

A very important problem is that of tracing out the distribution of Lake Superior copper. It is generally believed that most of the copper objects found in Ohio and eastward came from this source, but the source of supply for the Gulf states is not so clear, since some copper was to be found in the Appalachian chain.

Now turning to the region of higher culture, we have the best data from Peru, where ore was smelted in small pottery furnaces into which the operator blew through copper tubes. However, some ores, particularly silver, required greater heat and for such, large hopper-like pottery furnaces were set up on high hills where the wind would create a draft. At the various intakes to these furnaces, fires were placed to heat the air, a mechanism employed by some Old World smelters.

Another question of great interest is the use of bronze in the New World. The fact that implements contain tin, but in varying quantities, has led to the theory that the appearance of bronze is merely accidental or due to the natural mixtures in the ore. This view has received its strongest support from analytic studies of Peruvian copper tools, which reveal a lack of any consistent correlation between the amount of tin contained and the use for which the object was designed. Still, the investigations of Mead¹⁸ have

shown that the percentage of tin is often too great to be attributed to natural mixtures in the ore, and those of Mathewson¹⁹ suggest that there is a correlation between the difficulty of casting tools of different forms and the amount of tin they contain. According to this view, the amount of tin added was an index of the casting process and was not added to harden the tool. Microscopic studies of typical tools also show that the combination of tin and copper was often made in the melting pot and not in the smelter. We may, therefore, consider it as settled that the art of making bronze was known in the New World, though the real purpose of the process may have been the facilitation of casting.

In both Mexico and the Andean countries of South America, gold and silver were skilfully worked by casting, soldering, hammering, and inlaying.²⁰ The graves and sacred lakes of the Andes still yield very fine examples of this art, most of which are melted down to be sold as bullion. From Ecuador, we have a few examples of gold objects overlaid with platinum, which shows how truly meritorious were the aboriginal metal working arts of the New World.

- | | |
|---|---|
| 1. Holmes, 1897. I; 1919. I; Pond, 1930. I. | 12. McGuire, 1899. I; West, 1934. I. |
| 2. Spencer and Gillen, 1899. I. | 13. Holmes, 1897. I. |
| 3. Boas, 1909. I. | 14. Holmes, 1901. I. |
| 4. Smith, H. I., 1900. I. | 15. Moorehead, 1910. I. |
| 5. Rau, 1873. I. | 16. Cushing, 1895. I. |
| 6. Boas, 1909. I. | 17. Stefánsson, 1914. I. |
| 7. Moorehead, 1910. I. | 18. Mead, 1915. I. |
| 8. Laufer, 1912. I. | 19. Mathewson, 1915. I. |
| 9. Skinner, 1909. I. | 20. Saville, 1920. I; Thompson, J. E., 1933. I. |
| 10. Brower, 1904. I. | |
| 11. Moorehead, 1910. I. | |

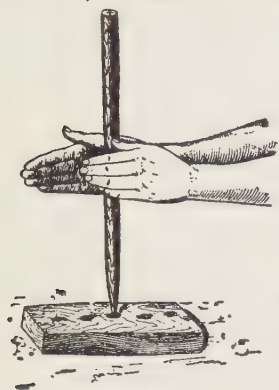
CHAPTER VIII

SPECIAL INVENTIONS

THERE remain a great array of culture traits we have not noted, such as machinery, fire-making, lamps, weapons, musical instruments, fermentation, glues and cements, paper, dyes and paints, woodwork, maps, astronomical knowledge, writing, poisons, medicine, surgery and anatomical knowledge, etc. For descriptive details on these topics, the reader must turn to the standard books of reference. Few of these subjects have been developed to a point whereby significant problems arise and the only function their discussion could now serve would be the increasing of our wonder at the complexity of aboriginal life. Therefore, we shall refer to but a small number of them.

One of the most fundamental traits in which the old culture of Asia outstripped the New World was the development of the wheel and revolving machinery. Yet, we have noted the spindle whorl and find certain kinds of drills that embody a kind of wheel concept. However, among the Eskimo we find drills turned by a strap pulled back and forth and also operated by a strong bow. This gives a reciprocating motion which is the principle in old Asiatic drills and lathes.¹ The geographical position of the Eskimo makes it probable that we have in this a case of relatively recent borrowing from the Old World, but the bowdrill was used by some Algonkin tribes and a prehistoric specimen has been reported from Utah. From the native sketches in Mexican codices and the references of early writers, we infer that the universal mode of drilling was by rolling between the palms of the hands. Even the Peruvians seem never to have

risen above this method. Yet, we have four problematic localities in which forms of the Old World pumpdrill occur: the Iroquois, Pueblos, Round Valley Indians of California, and the North Pacific Coast. In the case of the former, we cannot be sure that this drill was not introduced



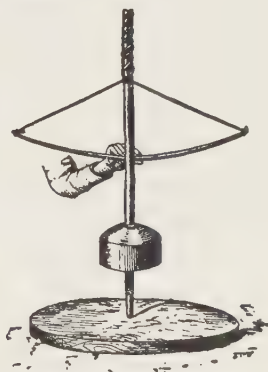
Hand Drilling



From a Mexican Codex



Strap Drill



Pumpdrill

Fig. 51. Methods of Drilling. Tylor.

by European colonists, and as archæological data from the Southwest give no trace of it, we may regard its presence there as of Spanish origin. Again, the California drill is operated on a slightly different principle, and its very limited distribution suggests its intrusion. If these forms of

the pumpdrill are truly independent inventions, they are evidently recent, for they would with time have spread over large areas. In short, we are justified in assuming that the rotating tool or wheel had no place in the original mechanical concepts of the New World.

Perhaps one of the greatest discoveries ever made by man was that fire could be kindled at will. The great English anthropologist, Tylor, has given us a model study of fire-making.² It appears that in aboriginal times practically the whole of the New World kindled fire with the simple hand-drill.³ Only among the Eskimo and a few of the adjoining Indians were other types of drill in use, as may be inferred from the preceding discussion. To strike fire from flint one must have good iron, preferably steel, hence, that method was unknown here; but nature provides a fair substitute in iron pyrites to which the Eskimo frequently resort and which is the prevailing method in the greater part of the caribou area. It is sometimes believed that this is intrusive from the Old World, but it is also the method in the guanaco area of South America, which suggests that the cause may be environmental.

Another invention of great significance is the art of writing. So far as we can tell, no form of writing was practised in South America, that achievement appearing to be a Maya contribution. The codices of Mexico and their official use at the time of the Conquest are a matter of common knowledge, but the more definite extinct Maya system of writing presents one of the great puzzles of our subject.⁴ Some progress has been made in recovering the key to it, in so far as the calendar and dates are concerned. From these, it appears that the Maya system is both pictographic and phonetic and that the Mexican scheme was in the main derived from it.

North of Mexico the existence of true writing may be doubted. In the pictographic year counts of certain tribes

of Plains Indians,⁵ we find something faintly suggesting the Mexican codex, and in the birchbark ceremonial tablets of the Ojibway we have true picture writing. Yet, in no case did such picture writing become an accepted mode of communication, its function usually being merely to herald the deeds of the scribe. By this means, however, were developed a few conventional characters that were equivalent to hieroglyphs.⁶

Yet, if the Inca of Peru did not have writing, they did have a scheme of knotted cords, or *quipu*, the methods of which have been inductively worked out by Locke.⁷ From this study it appears that the *quipu* could have served no other purpose than that of recording numbers. In fact, from the Spanish authors and the modern survivals of these knotted cord records, we know that the *quipu* were used to keep accounts. Mr. Locke's careful study of specimens in the American Museum of Natural History of New York demonstrates that the numerical system upon which the *quipu* were based was decimal. Further, an empirical analysis of the knots on the several cords shows them to have definite numerical relations from which we infer that the *quipu* were instruments of enumeration only. It is scarcely conceivable that they could have been used for the recording of other facts. Hence, the oft-repeated statement that they were used to record historic narratives or as mnemonic systems for the same, are unwarranted.

Before leaving this subject, we should note one very remarkable achievement by the Maya. This was no less than the discovery and use of the zero in mathematics.⁸ In the Old World, this important contribution to our culture was invented by an Asiatic people, probably a Hindu group, from whom it found its way into Europe. On the other hand, it appears in ancient Maya. The very isolation of these two discoveries suggests their independent invention, but irrespective of this interpretation, the use of the zero

in the New World gives its people a high place in culture.

Though somewhat of a diversion, we may at this point note the making of bark cloth and paper. In Mexico, where writing was practised, good paper was made of *amatl* bark and, when this was not available, of maguey fiber. The latter was covered with thin animal membranes, reminding one of parchment. Outside of Mexico and Central America, no paper was used, but some bark garments were made in the forest regions of South America. In this connection an interesting point is raised by the ridged bark-beater of Mexico and Central America, an implement which reminds one of the tool used by the tapa makers of the Pacific Islands. Then, far up on the west coast of North America, the natives shred cedarbark for weaving by beating with a similar ridged tool. We have here another very puzzling problem arising from the scattered distribution of an industrial process.

Another item of importance is astronomical knowledge and methods of reckoning time. Of the South American system, we know next to nothing, but that of the Maya excites our unbounded admiration. It is a veritable mathematical puzzle of the most ingenious kind.⁹ That it was based upon careful astronomical study is clear from the corrections made for the odd five days in the year. The religion of the Maya, Nahua, and Inca was largely based upon star gods and the movements of the heavenly bodies, itself implying very exact astronomical knowledge.

North of Mexico, methods of reckoning time are very crude, though apparently strongest among the Pueblo and adjacent Plains tribes. Some of the latter kept moon counts by tally sticks and scored the years by winters, but this was quite perfunctory. So far as we know, the northern limits of this influence are near the Ohio River, the whole distribution suggesting that it is a phenomenon of diffusion from the centers of higher culture.

Perhaps the next most significant topic in our list is that of weapons. Some very engaging problems center around the bow, harpoon, spear, shield, sling, ax, sword, blowgun, and defensive armor. Practically all have been made the subjects of special study. Thus, defensive armor of wood and hide has been studied by Hough, who for one thing favors a Japanese origin for North American plate armor.¹⁰ This subject has been more exhaustively treated by Laufer¹¹

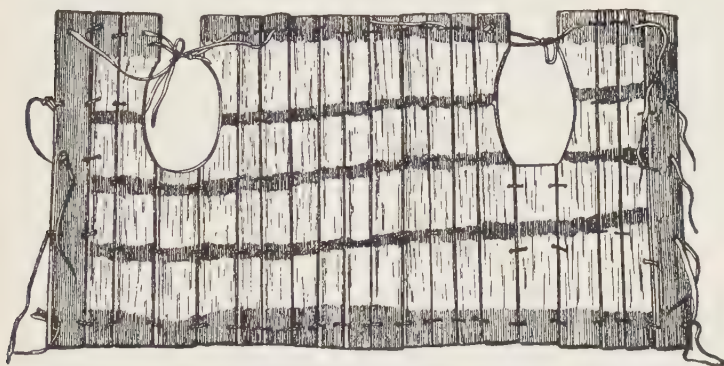


Fig. 52. Wooden Slat Armor, British Columbia. Teit, 1900. I

who demonstrates the improbability of its Japanese origin since this type of armor appears in other parts of Asia before it was known in Japan, particularly among the wilder tribes, suggesting that we may yet find a much earlier historical connection between the plate armor of the New World and the Old. Yet, while it is true that wooden armor is found only on the upper Pacific side, cotton armor was worn in Mexico and in Peru, often reinforced with metal. In recent times, at least, some forms of armor were used by the Araucanians and Abipones of Chile and Argentina.

While shields of wicker and cane were widely used in the area of intense culture and in the eastern maize area, the small circular shield seems to have centered in Mexico.

ABORIGINAL INVENTIONS

NOT KNOWN IN THE OLD WORLD

- | | |
|------------------------|------------------------------|
| 1. Balsam | 13. Kelp (iodine) for goiter |
| 2. Catuquinarú (drum) | 14. Maize and other plants |
| 3. Cigarette | 15. Manioc grater and press |
| 4. Cigar | 16. Maya numeral system |
| 5. Coca narcotic | 17. Pronged cigar holder |
| 6. Cochineal | 18. Quipu |
| 7. Curare | 19. Rubber |
| 8. Enema tube | 20. Rubber syringe |
| 9. Epecac | 21. Snow goggles |
| 10. Hammock | 22. Toboggan |
| 11. Head shrinking | 23. Tobacco pipe |
| 12. Hollow rubber ball | 24. Whistling jar |

KNOWN IN THE OLD WORLD, BUT BELIEVED TO HAVE BEEN INDEPENDENTLY
INVENTED IN THE NEW WORLD

- | | |
|---------------------------------|---------------------------------|
| 1. <i>A cire perdue</i> casting | 10. Boiled water for wounds |
| 2. Bronze | 11. Casting metals |
| 3. Barbed fish hook | 12. Drum signaling |
| 4. Barkcloth | 13. Fermentation of intoxicants |
| 5. Beam scale | 14. Paper |
| 6. Bee domesticated | 15. Steelyard scale |
| 7. Beeswax | 16. Water pump |
| 8. Boat sledge | 17. Writing |
| 9. Blowgun | |

Among the Pueblo and Plains tribes, a similar shield of bison hide appears, whose decorations are quite like those of ancient Mexico. Since the restricted distribution of the circular shield is geographically continuous, we may assume for it a single origin. In Peru, on the other hand, it is reported that shields were rectangular; yet, from the pottery collection in the American Museum of Natural History it appears that in figures of warriors the shields are more often circular. The devices upon these are usually simple and geometric, with feathers and pendants entirely absent.

A case of some theoretical interest is the blowgun, found among the forest Indians of eastern South America, in the Antilles, and even in eastern United States, the Iroquois of New York being the most northern point in its distribution. The somewhat analogous distribution of this weapon in Asia gives us one of the most probable cases of independent invention.

Finally, we may turn to the bow. Its use appears to have been universal from the Eskimo of the north to the simple Fuegians of the south. Though in the historic horse culture of the guanaco area it was not used, the evidence for its former use there is generally considered as conclusive. However, the tendency of the great military cultures of Mexico and Peru seems to have been toward mass fighting hand to hand, with swords and clubs. We notice the same thing among the Haida and other strong tribes of the northwest coast. In other words, as in the Old World, it was the less organized, more nomadic peoples who made most effective use of the bow.

One point of particular interest is the sinew reinforced bow, the highest type of which is found in Asia.¹² In various forms it covers the highlands of North America well down into Mexico, but did not reach far into the eastern maize area. The Eskimo also had this bow in several forms, those of the west being more like the Asiatic

type. Now, as this structural concept does not appear in South America,¹³ we have the suggestion of an Asiatic intrusion. This does not, however, apply to the bow trait as a whole, for its distribution carries it into the most remote marginal areas, and along with it the notched arrow-head. Thus bow culture, in general, seems best explained as a trait brought in by the earliest visitors to the New World. Among the curiosities is the pellet-shooting bow of Brazil which has its parallel in Asia, frequently cited as another clear case of independent invention. Yet there is good reason to believe that this bow was introduced into Brazil by Portuguese sailors and so not invented in Brazil.¹⁴

Nordenskiöld¹⁵ has compiled a partial list of noteworthy inventions made in prehistoric America. We have made some additions to this. As to the aboriginal origin of inventions not previously known in the Old World, there can be little doubt. On the other hand, the prevailing opinion concerning a number of inventions, common to both hemispheres, is that they were invented independently. Examples of these two classes are given in the table.

Finally, the independent discovery of coal as a fuel and its mining by the Hopi Indians in America is now in evidence. The prehistoric rifts and dumps of these ancient mines have been uncovered. Since the Hopi possessed no chimneys to carry away the smoke and gases, this fuel must have been used in outdoor fires only, possibly to burn pottery.¹⁶

1. Rau, 1873. I; Martin, P. S., 1934. I.
2. Tylor, 1920. I.
3. Hough, 1890. I.
4. Morley, 1915. I.
5. Mooney, 1898. I.
6. Wissler, 1911. I.
7. Locke, 1923. I.
8. Spinden, 1928. I.

9. Morley, 1915. I.
10. Hough, 1895. I.
11. Laufer, 1914. II.
12. Mason, O. T., 1894. I.
13. Meyer, 1898. I.
14. Nordenskiöld, 1920. I.
15. Nordenskiöld, 1929. I.
16. Colton, 1936. I.

CHAPTER IX

THE FINE ARTS

No doubt many readers will object to the title we have given this chapter on the ground that no aboriginal production can rise to the level of an actual "fine art," but we feel that the name is justified because the productions here considered occupy the same place in aboriginal life as do the fine arts in Europe. They may be comprehended under the familiar heads of sculpture, painting, literature, and music.

As we have indicated before, the center of New World sculpture was Yucatan, where stone carving is one of the most distinctive traits of Maya culture. True stone carving is rare in South America. The Peruvians did next to nothing of this sort; in fact, the only two places where stone carving rises to an observable level are in the extreme southern limits of Inca influence and again in Colombia, where we have the isolated statues of St. Augustine. In North America, no stone carving worthy of the name occurs north of the Rio Grande. Thus, the ancient Maya cities constitute the center of the sculptor's art, which fringes out in northern Mexico above and in Panama below. Although the carving of small objects in stone reached a very high level in the West Indies, it can scarcely be ranked as sculpture. Even the Aztec and other antecedent Mexican cultures which produced a fair amount of stone carving have not left behind evidences of sculptural skill strictly comparable to those of the Maya. Students of aboriginal art claim that the Maya development came before the Aztec but that the influence of the latter is plainly seen in the later Maya.¹ For example, the well known Chacmool

statue found at Chichen Itza is said to represent a Nahua type, examples of which have been found in several parts of



Fig. 53. Two Figures from Palenque, Chiapas. Spinden, 1913. I

Mexico and also in Salvador, south of the Maya. These statues are, however, fairly representative of aboriginal sculpture for human figures, but do not reach the level of



Fig. 55. *A Sculptured Turtle at Quirigua, Guatemala*
Spinden, 1913. 1

the best Maya work, of which the great turtles of Quirigua may be cited as examples. However, Maya sculpture is usually in low relief, sometimes little more than drawing. Among the numerous examples that have been brought to

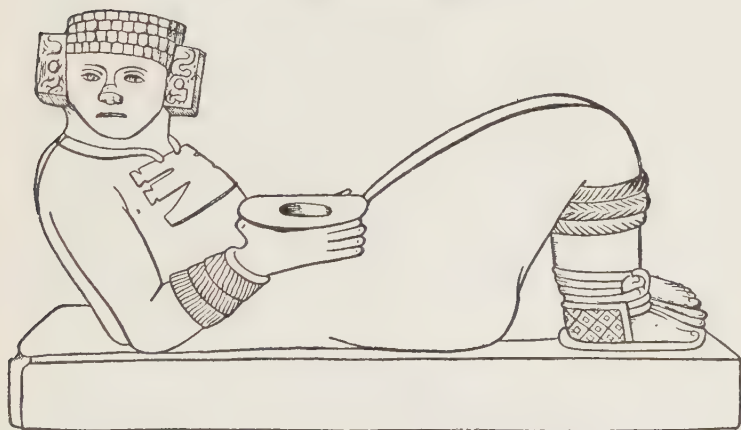
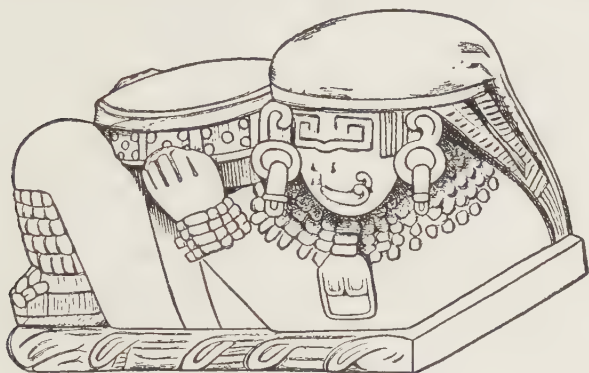


Fig. 54. Statues of the Chacmool Type. The upper one from Mexico, the lower from Yucatan. Sanchez, 1877. I

notice are the masterpieces shown in the drawings. The curious form of forehead appearing in all figures is not wholly conventional, but is a good representation of the effects of head flattening practised upon infants. Like the

Greeks and other classical sculptors, the Maya colored their carved figures. On the other hand, in contrast to the marble of the Greeks, the stones at the disposal of the Maya were very inferior and were worked entirely with stone tools.

Outside of the sculpture area as defined above, rock inscriptions and drawings are numerous, particularly in the northern continent. Most of these pictographs are obviously recent, but no one has studied them with sufficient care to suggest a chronological grouping.

Closely allied with sculpture, in our minds, at least, is modeling in clay. We have already noted this art in the chapter on ceramics. Very good examples, in some cases of respectable size, are found in both Mexico and Central America. The Inca culture of Peru, which did not successfully carve stone, did nevertheless, reach a high level in clay modeling, but apparently limited its work to small vessels and figures. At least, we find nothing like the large clay figures from Mexico.

Painting in the New World never rose above flat tones, but the drawing is often good. Many examples have been preserved in the codex collections from Mexican and Maya cultures, but nothing of the kind has come down to us from the Andean region. Of the historic peoples, the Eskimo seem to lead in graphic skill, though they are, perhaps, equalled by the Dakota.² Elsewhere drawing is rather crude.

LITERATURE

Every student of our subject feels a keen regret that so few fragments of Inca, Maya, and Aztec literature have survived, for there is just enough to show that a considerable advance had been made. To most of us the term literature implies printed works, but we are here using the term in the broadest sense, for literature arose and took many of its essential forms before attempts were made to

write it. There is fair evidence that the Inca cultivated the drama. Thus Garcilasso,³ himself of Inca descent, states that they "composed both tragedies and comedies, which were represented before the Inca and his court on solemn occasions. The subject matter of the tragedy related to military deeds and the victories of former times; while the arguments of the comedies were on agricultural and familiar household subjects. They understood the composition of long and short verses, with the right number of syllables in each." ⁴

Markham finds evidence of "four different kinds of plays called *Anay Sauca*, a joyous representation, *Hayachuca*, *Llama-llama*, a farce, and *Hanamsi*, a tragedy. There is clear proof that the memory of the old dramatic lore was preserved, and that the dramas were handed down by memory even after the Spanish conquest. It is to be found in the sentence pronounced on the rebels at Cuzco, by the Judge Areche, in 1781, which prohibited 'the representation of dramas, as well as all other festivals which the Indians celebrated in memory of their Incas.' " ⁵

A few complete plays have been recorded in later times, the most famous of which is *Ollantay*. As to what effect the intervening years of Spanish control had upon the literary form of these productions is now a matter of debate. The reader is referred to Markham's translation ⁶ and discussion for a statement of the case, and to our page 147 for a selection of Inca verse.

There is reason to believe that the early peoples of Mexico also had achieved something in the dramatic art, though good examples have not survived. Even among the Pueblo villages of the United States there are still native festivals in which there appear performances that deserve recognition as dramas.⁷ This is true, to a less degree, of certain ceremonies among the outlying tribes of both continents.

While the content we have given to the term literature is



Fig. 56. Distribution of Sculpture, Carving, and Modeling

far wider than the modern concept of books,⁸ the Maya and Aztec did have some written literature. Brinton quotes the Spanish writer, Landa (1565), as follows:—

The sciences that they (Maya) taught were the reckoning of the years, months, and days, the feasts and ceremonies, the administration of their sacraments, the fatal days and seasons, their methods of divination and prophecies, events about to happen, remedies for diseases, their ancient history, together with the art of reading and writing their books with characters which were written, and pictures which represented the things written.

They wrote their books on a large sheet doubled into folds, which was afterwards inclosed between two boards, which they decorated handsomely. They were written from side to side in columns, as they were folded. They manufactured this paper from the root of a tree and gave it a white surface on which one could write. Some of the principal nobles cultivated these sciences out of a taste for them, and although they did not make public use of them, as did the priests, yet they were the most highly esteemed for this knowledge.⁹

The first concern of the Spanish conquerors was to replace the native culture with their own, and it may be doubted if religion played a much less part in one than in the other. Hence, the Spaniards bent every effort to destroy the native priestcraft, and as the native literature was in its keeping, all books were destroyed at sight. Yet, the people could not be made to forget, and many manuscripts were written in secret. A number of these have been preserved under their native class name, *The Books of Chilán Balam*.¹⁰ It is from this source alone that we get an inkling of what Maya literature was like. No doubt, back of it all was a wealth of unwritten verse and narrative of real artistic merit.

Outside of the areas we have just discussed, we find but the feeblest effort to record tribal literature; the skeleton-like year counts of the Plains Indians and the mnemonic song tablets of the Algonkin are about all that come to notice. Literature in all these areas is comprised in mythology, ritual and song.

A *naïve* notion prevails among us that poetry and song belong to the most advanced states of culture, whereas, it is nearer the truth to say that they are the truly primitive modes of artistic expression. Modern Europe has a verse and song complex quite distinct from Asia and of very ancient origin. The scales of Bronze Age trumpets are said to prove its existence even at that early period. Versification must be as old as song, and both are found in all parts of the world. It is said, the languages of the New World do not have the vocalic quantities or accentuations of the classical world, so that aboriginal poetry is, in the main, made up of refrains of meaningless syllables and repetitions.¹¹ Yet, there is form and sentiment, often of great artistic merit.

Unfortunately, the study of aboriginal verse has not been attempted. The field is particularly difficult, for since the essence of verse is lost when translated, the multiplicity of native languages effectively bars progress. We cannot, therefore, compare our data or draw satisfactory conclusions as to the relative place of Inca or any other type of verse in the New World as a whole. As a suggestion, the reader may compare the following selections:—

AN INCA HYMN¹²

O Uira-cocha! Lord of the universe,
 Whether thou art male,
 Whether thou art female,
 Lord of reproduction,
 Whatsoever thou mayest be,
 O Lord of divination,
 Where art thou?
 Thou mayest be above,
 Thou mayest be below,
 Or perhaps around
 Thy splendid throne and sceptre.
 Oh hear me!
 From the sky above,
 In which thou mayest be,
 From the sea beneath,

In which thou mayest be,
 Creator of the world,
 Maker of all men;
 Lord of all Lords,
 My eyes fail me
 For longing to see thee;
 For the sole desire to know thee.
 Might I behold thee,
 Might I know thee,
 Might I consider thee,
 Might I understand thee.
 Oh look down upon me,
 For thou knowest me
 The sun—the moon—
 The day—the night—
 Spring—winter,
 Are not ordained in vain
 By thee, O Uira-cocha!
 They all travel
 To the assigned place;
 They all arrive
 At their destined ends,
 Whithersoever thou pleasest.
 Thy royal sceptre
 Thou holdest.
 Oh hear me!
 Oh choose me!
 Let it not be
 That I should tire,
 That I should die.

Far removed, geographically, from this beautiful verse,
 but of almost equal merit, is the following Navajo prayer
 chant:—¹³

A NAVAJO PRAYER

Tsegihi.

House made of the dawn.

House made of evening light.

House made of the dark cloud.

House made of male rain.

House made of dark mist.

House made of female rain.

House made of pollen.

House made of grasshoppers.

Dark cloud is at the door.
The outward trail is dark cloud.
The zigzag lightning stands high up on it.
Male deity!
Your offering I make.
I have prepared a smoke for you.
Restore my feet for me.
Restore my legs for me.
Restore my body for me.
Restore my mind for me.
Restore my voice for me.
This very day take out your spell for me.
Your spell remove for me.
You have taken it away for me.
Far off it has gone.
Happily I recover.
Happily my interior becomes cool.
Happily I go forth.
My interior feeling cold, may I walk.
No longer sore, may I walk.
Impervious to pain, may I walk.
With lively feelings may I walk.
As it used to be long ago, may I walk.
Happily may I walk.
Happily with abundant dark clouds, may I walk.
Happily with abundant showers, may I walk.
Happily with abundant plants, may I walk.
Happily on a trail of pollen, may I walk.
Happily may I walk.
Being as it used to be long ago, may I walk.
May it be happy (or beautiful) before me.
May it be beautiful behind me.
May it be beautiful below me.
May it be beautiful above me.
May it be beautiful all around me.
In beauty it is finished.
In beauty it is finished.

Going still farther afield we have the following poetical gem from the Eskimo:—

I look toward the south, to great Mount Koonak,
To great Mount Koonak, there to the south;
I watch the clouds that gather round him;
I contemplate their shining brightness;

They spread abroad upon great Koonak;
 They climb up his seaward flanks;
 See how they shift and change;
 Watch them there to the south;
 How the one makes beautiful the other;
 How they mount his southern slopes,
 Hiding him from the stormy sea,
 Each lending beauty to the other.¹⁴

No doubt these verses are quite freely translated, but linguists have recorded very similar examples in the original, and Mr. James R. Murie has furnished us the texts and translations for two short Pawnee songs:—

WAR SONG OF THE PAWNEE IRUSKA SOCIETY

Kira katū kari rarix^a
 Kira katu kari rarix^a
 Kira katu kari rarix^a
 Kira katu kari rarix^a
 Kira katu kari rarix^a ey ey a
 Let me see (if) this is real — — —
 Ti rat pari
 Am I living (my life)
 Tiras ta kawahat
 You (who) possess the skies

A good free rendering of this was published by Brinton:—¹⁵

Let us see, is this real,
 Let us see, is this real,
 Let us see, is this real,
 This life I am living?
 Ye gods, who dwell everywhere,
 Let us see, is this real,
 This life I am living?

PAWNEE WAR SONG

He e e e e e e
 Yo e yoha eyū eyu eyo
 Eru he ee ee ee
 A tiras ta kawaha ti rat pari hey

Oh you who possess the skies

Am I living.

Ero he ee ee ee

Tat ara kitawira

I in you entrust my fate

Hawa re ra wira

Again I do have on warpath

He e e e e yo

This is said to be a popular song among the Pawnee and was composed by a man named Tirraktawirus when upon the warpath alone. Therefore, the following translation by Miss Curtis¹⁶ is not far wrong:

O great expanse of the blue sky; see me roaming here.

I trust in you, protect me!

Again on the warpath, lonely.

From these texts we see that many of the lines in a verse are filled out by meaningless syllables and even the thought is carried along by abbreviated phrases here and there. The full import of such a verse is not self-evident, but is conveyed by a secondary prose narrative, in which the incidents and situations leading to the composition are fully stated. This must be considered in translations, such as we have just noted, for this setting is generally known to the singers. Thus, it appears that the song verses of the more primitive tribes are not themselves narrative, but rather mnemonic suggestions of prose tales. One more example may not be amiss:—

DAKOTA FOX SOCIETY SONG¹⁷

E ha e—yo e—yo he ye ye

E ha e—yo e—yo he ye ye ye

E ha e—yo e—yo he-ye yo yo

E ha e—yo e—yo he ye yo

He ye e ye yo!

To-ka-la-ka mi-ye ca ya ya,

Lo, the Fox, the Fox am I! yea, yea,

Na ke nu la wa on we lo,
Still the Fox a moment yet then,

We ha e yo e yo he ye yo!
Then the Fox shall be no more!

This is the song of a warlike society, the joining of which carries an obligation of bravery and even foolhardiness when on the line of battle; hence, the pathetic lament of the phrases.

Under the head of mythology we shall consider the literary value of prose narrative. In such narrative and oratory rests a vast store of unwritten lore, much of which has great literary merit. In our own literature the speech of Logan is justly famous. As to its precise correctness we may entertain some doubts, but there are authentic reports of similar speeches from other Indians, and anthropologists have collected literal transcriptions of discourses that rise to the same level of excellence. However, for the comprehension of this phase of New World culture, the reader must turn to the published works on Indian languages.

MUSIC

If the history of verse did not show its origin to be in song, its form would; but there is another side to the song, *viz.*, the music. What the music of the Peruvians and Maya was like we can only conjecture, but among the less cultured surviving tribes we find aboriginal music in what seems to be an unadulterated form. Though some attention has been given to the subject, the study of this surviving native music as a culture trait-complex has never advanced beyond a few isolated experiments. On the other hand, a number of investigators have sought by analytic methods to discover the fundamental structural elements, but their work is still in the controversial stage. For one thing, effort has been made to discover the ideal scales toward which the Indian

singer strove, whereas, the proper procedure is the empirical determination of actual scales. Nevertheless, this analytic study has revealed what seem to be the most distinctive characters of New World music. First and foremost is what has been described as a "rhythmic pulsation of the voice on sustained notes somewhat analogous to the effect produced on the violin when the same note is slightly sounded several times during one stroke of the bow."¹⁸ This is a feat of singing learned with difficulty and which makes the proper notation of the music in our system extremely difficult. Another surprising characteristic is the dissociation of dance and instrumental rhythms from the song. Thus, we may sometimes find the drumming, dancing and singing each in a different rhythm, something almost incomprehensible to our musicians. As may be expected, there is no harmony, but this quality is lacking in all primitive music; hence, its absence is not distinctive of the New World. Yet, too much weight should not be given these immature generalizations, for in the first stages of linguistic development analogous traits of New World languages were assumed, most of which are now historical curiosities. What we need first of all is patient collecting and classifying. An interesting approach to the classification of aboriginal music has been suggested by Miss Roberts¹⁹ in that songs fall into groups according to composition patterns. These patterns seem, on the one hand, to have geographical distributions, and, on the other, to be associated with ritualistic concepts. This discovery promises not merely the delineation of musical areas, but the establishment of relations between the composition of the song and the ritual of which it may form a part. A matter of further interest is that in aboriginal times many intelligent Indians experimented with the composition of new songs or the revision of old ones. In North America most normal Indian men were assumed to have one or more personal songs.

MUSICAL INSTRUMENTS

Anthropologists usually consider noise-making and musical instruments as in the same class. Most musical instruments may be comprehended under three categories: bang, blow, and scrape. The aboriginal New World is strong in the first, weak in the second, and all but ignorant of the third.²⁰ Stringed instruments characterize the third class and about the only New World contrivance of this kind is the musical bow, but whether this is aboriginal is still controversial. Even if it should prove to be pre-Columbian it would stand as the only aboriginal stringed instrument in the New World.

Among instruments of the first class, rattles and drums dominate. The wind instruments used are chiefly whistles and flutes, though trumpets were known. Some reed instruments have been observed among living Indians, but since these are suspiciously like European models we may consider them as probably not aboriginal. Of the two continents, South America seems to lead in the number and variety of musical instruments recognized as of Indian origin.

Rattles seem to be the most common, and while of many forms and materials, the calabash type dominates with a distribution coincident with agriculture, but in North America rawhide rattles of similar form and the hollow wooden rattle of the Northwest Coast greatly extend the range of this globular type. Curiously enough, in South America we find rawhide and basketry rattles on the margins of the continent. It is a plausible assumption that the globular type originated among a calabash-producing people, probably in Middle America, and was thence diffused. Among the simpler forms of rattle the notched stick has a respectable distribution.²¹

Drums seem to be of greater variety. One general tam-

bourine type is found in the bison area and northward to the Eskimo and Siberia. In the eastern maize area the single-headed water-tuned drum prevailed, whose distribution seems to be continuous through the West Indies into South America. In southwestern United States and southward, a double-headed drum similar to our own was in use. Large wooden signal drums are found in the Amazon country.

South America leads in the variety of wind instruments. The most complicated is the pan-pipe²² of Peru and Brazil, known in prehistoric time and now considered an independent New World invention.²³ Trumpets were used in Mexico and Peru and still survive in the Amazon area. Some of the most interesting forms are the conch-shell, the pottery horn, and the bamboo types. In the Old World the horns or tusks of animals stand out as the original trumpet form, but horns seem not to have been so used in the New World. Again, all New World trumpets were end-blown. While it is true that the side-blown variety occurs in South America its distribution is such as to suggest its recent origin by African colonization.²⁴ Closely allied to this is a reed instrument of cane, sometimes called a cornet, used in Peru and still found along the Amazon. True flutes were used in Peru,²⁵ but in North America, the flageolet. No more than with song music can we compare the types of composition for these instruments in the several geographical areas. This is unfortunate, for it seems that music offers opportunities to study the diffusion of composition patterns and the invention of new types. Here is a weak point in the careful, painstaking study of ritualism as now prosecuted by American anthropologists, for when a ritual passes from one tribe to another (of which phenomenon we already have many instances), we naturally wonder what happens to the songs which are usually regarded as its vital parts.

1. Spinden, 1913. I.
2. Mallery, 1886. I.
3. Garcilasso, 1688. I.
4. Markham, 1910. I, p. 147.
5. Markham, 1910. I, p. 147.
6. Markham, 1910. I.
7. Beckwith, 1907. I.
8. Mackenzie, A. S., 1911. I.
9. Brinton, 1890. I, p. 245.
10. Brinton, 1882. II; Gordon, 1913. I.
11. Brinton, 1890. I.
12. Markham, 1910. I, pp. 100-101.
13. Matthews, 1907. I, pp. 54-55.
14. Brinton, 1890. I, p. 290.
15. Brinton, 1890. I, p. 292.
16. Curtis, N., 1907. I, p. 112.
17. Curtis, N., 1907. I, p. 51.
18. Curtis, N., 1907. I, p. 27.
19. Gilman, 1908. I; Densmore, 1918. I; 1932. I; Burton, 1909. I; Roberts, H. H., 1933. I.
20. Nordenskiöld, 1918. I; Izikowitz, 1935. I.
21. Lowie, 1909. I, p. 219; Hawley, 1898. I; Roberts, H. H., 1936. I.
22. Mead, 1924. I; Nordenskiöld, 1918. I.
23. Izikowitz, 1935. I.
24. Nordenskiöld, 1918. I.
25. Nordenskiöld, 1918. I.

CHAPTER X

SOCIAL GROUPING

IN the sixteenth century, there were at least three well-organized governments in the New World: the Nahua, Inca, and Chibcha. Though our data as to the details of these organizations are but fragmentary, it is clear that the social structure upon which they rested was communistic. The family group was the unit to which plots of land were assigned and upon which levies were made. Each family group had its head man who also held a place in the council for the next higher group. The government was vested in a single family group, one of whom was the chief or monarch. He qualified and was chosen by such means as this group elected, regardless of his parentage. These were the fundamental characteristics common to all the governments of the area of higher culture; they differed from each other not in these but in the ways in which the ruling family group built up its power and organized its political machinery. The thoroughness and efficiency of the Inca system was notorious, for it left practically nothing to the individual, an ideal toward which certain European states seem to be headed. The apparent ease of the Spanish conquest is often cited as proof to the contrary, but the conquerors succeeded by a bold dash at the ruling group and, once having laid hands upon the machinery, the thoroughly domesticated natives were easily handled. So it was rather by the very thoroughness of the system, than its weakness, that they succeeded. In fact, wherever there were still independent cities, the invaders met with the most heroic resistance, some communities perishing to the last man.¹ Further, it

was largely the ready-trained army of the native kingdoms, or such units of it as the usurpers could lay hands upon, that did the work against these refractory cities.

The political organization in Mexico was less thorough than that of the Inca, though far superior to that in Colombia. Mexico was ruled by the head family group in the City of Mexico, which Bandelier² has shown rose from the determined head of a warlike people that the preceding government had failed to conquer. When once upon its feet, this ruling family conquered, one by one, the surrounding cities and forced them to pay tribute. The system was thus plainly a matter of military rule, arbitrary and absolute. Apparently, this power had not yet seized the entire social machinery of production as in Peru, but was in a fair way to do so when the Spaniards came.

The same form of growth by conquest of city after city is apparent in the Inca scheme, while in Colombia it was still in its incipient stage. These main characteristics will best enable us to comprehend this remarkable development.

It is probable that underlying governments so built up, there must necessarily have been originally a considerable diversity of language and social custom. As to the attitude of the several governments toward these subjected groups, we are left in doubt, but both in Mexico and in Peru the conquered were required to participate in the official religious practices, or perhaps we should say that because each military and other governmental act was accompanied by ritualistic observances, the conquered could not conform to one without the other. The Inca seem to have developed the method of dispersing refractory social groups over the empire as a means of decreasing resistance.

Outside of the Andean region, the family group appears to be the prevailing independent unit, but, as elsewhere, the tendency is for two or more of these to live together under some kind of a federation. So far as we know, no strong

subjecting tendencies were developed by any of these federations. The Araucanians seem to have formed a very efficient organization for the common defense, since neither the Inca nor the Spaniard succeeded in subjecting them; yet they seem not to have developed the missionary idea of extending their culture by conquest.

In North America we find upon the frontier of the Mexican state a large number of pueblos, each village or group of villages, a government to itself, yet recognizing a common interest in times of peril. Their heroic struggle against the Spaniards in 1680 reveals the existence of basic elements for union, but at no time did any of these villages appear to be moved by the spirit of conquest and force its neighbors into a closer organization. On the other hand, they were not easily assimilated, preserving to this very day a great deal of their independence. It is quite probable that underneath their individualities these villages, with their family groups, closely coordinated ritualistic observances, their elected governors and war captains, present the fundamental characteristics of the towns from which the southern aboriginal empires were built up.

In the immediate vicinity of the Pueblo villages were the somewhat nomadic Apache, Ute, and Navajo, with simple tribal organizations in which each local group was a law unto itself. But to the east, through the Gulf States and up into Virginia, we find a tendency to close federation. Among the best-known examples are the Cherokee, Creek, and Powhatan organizations. Farther north in New York, was the famous Iroquois League,³ with its finely balanced government, the aggressiveness of which created several small but weak neighboring unions. Farther west, we have the Pawnee group and the very loosely coordinated Dakota council of "Seven Fires." Beyond this, we have little more than informal alliances, as the Blackfoot, Gros Ventre, and Sarsi; the Cheyenne, Arapaho, Kiowa, and Comanche.

Yet, outside of these few attempts at political consolidation, we must be prepared to meet a bewildering array of small independent tribal governments and, in some cases, nothing at all save the fundamental unit groups. Thus it happens that one of the most forbidding aspects of our subject to the layman, is the nomenclature by which we designate these numerous political groups. All these group names have historical origins and so represent neither systems of tribal relationship nor equal social values. When our colonial forefathers observed a new political group under a common head, they gave to it a tribal name derived from its own language or from some other circumstances. Such designations can have little classificatory value. It is true that a linguistic nomenclature has been provided which is essentially classificatory, but this again employs the conventional historic names for the several social groups. The list for these tribal names is further complicated by the occurrence of alternate equivalents and again by unexpected subdivisions into subordinate groups. Hence, when a tribe name is encountered, practically nothing except more or less political independence can be taken for granted; as to other relations, we must know the conditions in each case. What we have just seen to be the most fundamental social tendencies of the New World, will prepare us for a very formidable list of tribes. It is estimated that for North America alone, our literature contains more than two thousand tribal designations. To offer such a list here would avail little, but some of the most important tribal names will be given in the linguistic classification (p. 389).

No important problem seems to hinge upon this tribal nomenclature, since it is solely a matter of convenience. When, however, we come to consider the internal organization of these conventional tribal groups, we do come face to face with one of the most important problems in social science. That very distinguished American social philoso-

pher, Lewis H. Morgan, took the data for his theory of marriage and social regulation from the Iroquois and other North American tribes and his field reports are still models of accuracy.⁴ Following his lead, Bandelier⁵ gave us an exhaustive discussion of the Mexican system. Morgan was, above all, an evolutionist, who considered all now inexplicable social usages to be survivals of a state of culture when they did have a real function. For example, the observed tendency to use the same relationship term for father and uncle, was considered as dating from a time when there was no ready means of knowing who was the true father. As time went on, new data began to present inconsistencies with Morgan's views, but the recent extended discussion of Rivers⁶ has sought to justify the earlier hypothesis on the ground that the very last culture traits to be lost or modified by a social group, are those that have to do with family relationships. This work, perhaps more than anything else, stimulated a number of American field-workers⁷ to reexamine the whole problem.

THE LOCAL GROUP

The comprehension of social organization is by no means easy because the phenomenon is very complex and lacks objective definition. In North America, where we know the subject best, we find among other forms a natural social group, or band, under the leadership of a competent individual. The nucleus of this group is frequently the immediate family of the leader, recruited by relatives and strangers who have attached themselves because of faith in his leadership. Thus an energetic leader may soon have a large following. Such groups are usually found among hunting peoples who maintain their tribal solidarity by meeting once or twice a year *en masse*, at which time only, the tribal government is in function. After these brief intervals, they again scatter out in these same groups, or com-

munities. In the United States and Canada, and in fact everywhere, the annual round of seasons gives human social life a kind of yearly cycle. This is very striking in the bison area, particularly among those tribes on the borders who raise a little maize or tobacco. Here the severe weather of January finds the small bands we have noted sheltered in little valleys some distance apart, each usually having its definite camping place. Here they stay until spring, when their fields are prepared. When the crop is in, a call is sent out by the tribal chief for all to meet at a certain place, where the bands are automatically confederated into an organized camp which now moves and kills bison as a body. After an interval, they return to harvest their crop and then once again set out for the autumn hunt, to scatter out, at last, to their homes in December. In such a political group, it is clear that the simple band is the fundamental unit and as such is little more than the voluntary association of individuals under an able leader. All are more or less dependent upon his bounty. Among these may be a shaman and also a priest, though the leader himself may be one of these.

Some authors designate such a band as a family group, but that is going a little too far, for when we have full data, these bands are found to contain many individuals not descended from the leader and not even his relatives. For these reasons, the term local group is preferable.⁸ There is, however, a native tendency to consider all members of such a band as relatives in a figurative sense, and to apply blood relationship terms to them, as men of similar age-grades will speak of themselves as brothers, etc. As these groups have more or less permanency, it is conceivable that in time they may come to be largely blood groups.

In such a society, an individual is known by his personal name, together with the band name, but, as among us, each must keep track of his blood relationship by specific memory. We see then that the true family group, as we con-

ceive it, exists somewhat independent of the band. All the world over, the prime importance of keeping track of blood relationship is recognized, particularly in respect to marriage, or sexual life. These bands, on the other hand, seem to have no specific function in the regulation of marriage, but to be economic or political groups.

Such bands, as we have just outlined, are characteristic of the great hunting areas (the caribou area, the bison area, and the guanaco area, though our data here are vague), and the interior of the salmon area. They may also prevail in the manioc area, but we lack good data. In these various areas, we have a great range of tribal organization, but the fundamental units are the loose bands, or local groups, we have just characterized.

CLANS AND GENTES

Now when we come to the centers of more intense culture, we find what is called a clan or gens, as the case may be. If we should take one of the preceding groups and make it permanent in the sense that everyone born in it is forever a member, we would have a somewhat different affair. The group name would now be firmly fixed to the individual and define his descent, for by it he could know, in theory, at least, that he was a blood relative of every other person with that group name. If the group is small, many individuals will be of too near kin to marry and must bring in wives or husbands as the case may be. Since the parents are now of different groups, their child must inherit one or the other group name. There are but two alternatives. When he takes the mother's group name, we use the term *clan*, when the father's, *gens*. We do not intend to imply that the *clan* necessarily came about in this manner, but give the statement this form for the sake of clearness in distinction.

Now, it frequently happens that certain social regulations

are defined by the clan or gentile name. In many cases, the universal prohibition against marriage between nearest kin is formalized into a rule that persons with the same clan or gentile names cannot marry. This gives what is spoken of as an exogamous relation. In the New World, at least, this rule does not negate the world-wide prohibition against the marriage of parents and children and other near relatives, but is an additional social regulation. On reflection, it will be apparent that as a clan or gens expands, it will become more and more easy for one to find within it a mate not ineligible by blood. In fact, we have the example of the Pawnee clan organization on the endogamous principle; *i.e.*, one is expected to marry a member of his own clan, but, of course, not a near relative.

This peculiar association of membership in a social group with marriage restrictions has received a great deal of attention from students of society, many of whom have looked upon it as the key, not only to the marriage system, but to society as a whole. Yet, in the light of concrete data for the New World, this seems unwarranted. When two social systems, like clans and gentes, have so much in common and stand in contrast to other systems of social grouping, they constitute a single class for which the term *sib* has been proposed. Turning to geographical distribution, sibs (clans and gentes) prevail in the area of intense agriculture, the eastern maize area, and portions of the salmon and manioc areas. The suggestion is that sibs appear wherever we find political solidarity. If we consider the gentile form only, we find it somewhat in the majority, dominating among the Siouan peoples of the bison area, the Algonkin of the Great Lakes, the Nahua, Maya, and Inca peoples, with outlying localizations in both continents. Yet, the clan also has a respectable distribution among the coast tribes in the salmon area, the eastern and southern parts of the eastern maize area, the Pueblo tribes, the



Fig. 57. Distribution of Clans and Gentcs

Antilles, the Arawak of South America, and the Chibcha of Colombia and Central America. Thus there is no great disparity, but considering clans and gentes as merely two forms of the same grouping, we see that the clan-gentile system does prevail and is, in general, a correlate of political solidarity.

As in other social phenomena, the observed correlation is far from absolute, but when so many coincidences occur in phenomena inherently variable, the tendency is to assume a common factor.

However, the clan or gens is not necessarily the ultimate social unit, but may by expansion come to have unexpected relations to the tribal group. Kroeber's⁹ investigations of the Pueblo peoples of southwestern United States show that many clans have members in each village, a condition somewhat similar to that of the Iroquois as analyzed by Morgan¹⁰ many years ago. In these cases, we see that the clan organization simply cross-sections the community or tribal grouping, the one being, as it were, vertical and the other horizontal. In the Iroquoian system, we find a close federation between the tribal groups which stopped little short of a compact political state. Unfortunately, we do not know just how the clans were distributed in the confederated tribes of southeastern United States, nor the gens in the ancient states of the Aztec, Maya, and Inca, but we find the two systems together—compact government and the clan-gens organization. It is, therefore, fair to raise the question as to whether the real basic unity that made possible these aboriginal political states did not rest with their clan and gentile relations, since in these they had a definite bond. A study of the Arawak would be interesting in this connection, for though they are scattered far and wide, they seem to have preserved a definite clan system throughout.

We have just noted how the clan-gens grouping seemed

to be independent of the tribal grouping and was not necessarily a political scheme. We may, therefore, be prepared to learn that clans are sometimes grouped or linked in ways peculiar to themselves. Thus, among the Menomini of the eastern maize area, we have the several gentes in groups of three or more, in each of which one is regarded as the leading gens.¹¹ A somewhat similar crude sort of linking is reported for the Arizona Apache, though in this case for clans. Evidence for certain kinds of linking occurs among the Pueblo villages and elsewhere. The phenomenon is of interest here only in that it is the vaguer and less definite of such associations, for when two or more of the clan-gens groups are subordinated to a complementary division of the tribal unit, they are considered a phratry. What we have noted as to the association between the clan-gens system and marriage restrictions, applies here also, for exogamous linked groups are likely to be mutually exogamous. The phratry also may become the controlling unit as, for example, among the Iroquois.

DUAL DIVISIONS

In addition to the social groups we have so far considered, we find another peculiar one. Thus, among certain Pueblo Indians of southwestern United States (the Tewa), the village is divided in two halves, or moieties, known as summer and winter people, since one has charge of certain functions in summer, the other in winter. A similar grouping is reported for the Caddoan¹² and a part of the Siouan stock in the Mississippi Valley,¹³ the Miwok of California¹⁴ and also among the Iroquois of the east.¹⁵ In such cases the clans or gentes are sometimes disregarded, but are usually treated as subdivisions of the moiety. For example, the Seneca division of the Iroquois had four clans in one moiety and an equal number in the other. Though in this

case equally divided, we find the Hidatsa with four in one and three in the other, and the Pawnee with two in one and eleven in the other. As an example of a moiety that disregards the gens or clan, we have the Fox and Kickapoo tribes, each of which has gentile groups; but membership in the moieties is determined arbitrarily when the child is named, so that the members of a given gens will be divided between the two. In this dual grouping of tribes, we are dealing with a curious phenomenon which is not yet well understood. It is almost universal in the southern half of the eastern maize area, the eastern half of the bison area, and extends well down into the area of intense culture, if indeed not to its extreme borders. The data we have at hand seem to justify the conclusion that a moiety is not merely a larger division of clan or gentile groups,¹⁶ but a grouping of another kind. This is clearly the case among the Sauk and Fox where children at birth are assigned, regardless of their gens, to one of two moieties whose only function seems to be pleasurable social rivalry in certain games. Something like this is found in the southern part of the eastern maize area and has been reported from the Jicarilla Apache. The precise distribution of this custom cannot be stated, but something very much like it has been noted among the western Eskimo.¹⁷

If these dual divisions were entirely for sport and ceremonies, their origin and function would be intelligible, but the problem is complicated by the presence of exogamous regulations. For example, among the Iroquois, the dual divisions, or moieties, are the phratries and were formerly exogamous, so that one must not only marry out of his clan, but out of his moiety. It is not clear, therefore, whether the mere fact of dual division is significant or just accidental. Until the whole subject is searchingly analyzed, we cannot deal with it in a work of this kind. The present tendency is to regard it as in the main accidental and to con-

sider the exogamous character of moieties mere extensions of the system regulating marriage.

RELATIONSHIP SYSTEMS

Morgan found North American aboriginal relationship systems to be of two kinds, classificatory and descriptive. The former expresses the kinship of groups or classes of relatives rather than individuals. Biological descent is disregarded. For example, some classificatory systems place the male parent in a class of equals, to each member of which the term "father" is applied. A descriptive system is one in which the objective is to define actual blood relationship, as in our own case, mother and son. These distinctions are clear enough, but in actual life one may meet with tribes using mixed systems, so that difficulties may arise in deciding to which class the tribal system belongs. Yet this is no fair indictment of Morgan's idea, because most systems of classification fail to fit all variants. By noting which type of relationship seems to dominate in a tribe its classification can be justified. As may be expected, anthropologists find classificatory systems the more interesting, possibly because they appear so senseless.

Spier¹⁸ once reviewed the data for aboriginal United States and Canada, first making an empirical classification in which eight types were recognized. Variations were numerous, but all the tribal systems observed revealed classificatory tendencies. This is true for the tribes residing in the areas for clans and gentes (p. 168), suggesting a possible functional relation between sibs and classificatory systems. This author's distribution maps are worthy of study. His types tend to cluster in areas rather than to scatter, suggesting borrowing. This indicates, in turn, that, like other customs, classification of relatives has geography. For example, the Salish type is found around Puget Sound; the Yuma type in Southern California; the Crow type,

chiefly in southeastern and southwestern United States; the Iroquois type ranges from New York State along the Great Lakes, thence westward in northern United States and southern Canada. The probability is that, notwithstanding all the consideration given to relationship systems, we are still far from an understanding of them as social instruments.

There are, however, other points of difference in relationship systems as, for example, the use of reciprocal terms, or the method by which the same word is used by uncle and nephew, grandparent and grandchild, to express the relation of the one to the other. Such a system is found among the Kootenai, Ute, and most Shoshonean tribes of the highlands in western United States. By taking note of such distinctions as these, it seems possible to localize several geographical types of nomenclature whose investigation promises to hold an important place in the anthropology of the future.

TABOOS AND SOCIAL PRIVILEGES

This is a convenient place to note certain curious social phenomena pertaining to the relationship complex. In many parts of the world, a man is not permitted to speak to his mother-in-law and in some cases not even to look at her. These restrictions are designated as mother-in-law taboos.¹⁹ The actual New World distribution of this custom cannot be stated at present, but it is found among many tribes in the interior of North America. In a few cases, the restrictions seem to have applied to one's father-in-law also, particularly among the Plains-Cree of the bison area.²⁰ On the other hand, the father-in-law and the daughter-in-law are less rigidly restricted, their attitude toward each other being much like that of father and daughter.

This subject deserves more careful investigation, first as to its distribution and ultimately as to its significance, since

it seems to be the natural correlate of certain forms of marriage. The data so far available on their geographical distribution show it to be erratic rather than continuous, even one or two tribes speaking mutually intelligible languages differing in the keeping of this taboo. This is shown by the following data supplied by Dr. R. H. Lowie:—

The North American tribes, known to have the mother-in-law taboo, are: the Cree, Assiniboin, Blackfoot, Arapaho, Crow, Lemhi Shoshoni, Dakota, Hidatsa, Mandan, Omaha, Navajo, Apache, Tübatulabal (Kern River Shoshoni), the Western Mono (not the Eastern Mono), Haida, Creek, Alibamu, Kiowa, and Cheyenne. Those known not to observe it are: the Pawnee, Kwakiutl, Nootka, Paviotso, Comanche, Wind River Shoshoni, Hopi, Zuñi, Ute, Nez Percé, Tewa, Keresan, Beaver, and tribes in northwestern California. For South America the taboo has been reported for the Guaycuris and the Carib of the Antilles.

However, the apparent erratic distribution of this custom may be due to incomplete information.

There are other phenomena of this class, of which the joking-relationship is a type, so far reported for central North America only. In general, the custom is for individuals of certain specific relationships to have the privilege of almost unlimited personal ridicule, even in public, which must be cheerfully borne. For example, among the Blackfoot a man enjoys the conspicuous privilege of defying the conventionalities of speech in conversation with the sisters of his wife, but not with the wife of his brother. Conversely, he must be extremely circumspect in conversation with all the male relatives of his wife. All such conventionalities deserve careful study because they promise to be survivals of more archaic forms of social and marriage systems.

AGE GRADES AND SOCIETIES

As in other parts of the world, we find in the New World a tendency for a social group to recognize conventional age-classes, particularly for the males. Thus, for the purposes of administration, the Inca government divided the males into the following classes:—

1. *Puñuc rucu* (old man sleeping), sixty years and upwards.
2. *Chaupi rucu* ("half old"), fifty to sixty years. Doing light work.
3. *Puric* (able-bodied), twenty-five to fifty. Tribute payer and head of the family.
4. *Yma huayma* (almost a youth), twenty to twenty-five. Worker.
5. *Coca palla* (coca picker), sixteen to twenty. Worker.
6. *Pucllac huamra*, eight to eighteen. Light work.
7. *Ttanta raquizic* (bread receiver), six to eight.
8. *Macta puric*, under six.
9. *Saya huamrac*, able to stand.
10. *Mosoc caparic*, baby in arms.²¹

A somewhat similar classification seems to have been recognized by the Aztec,²² and even out in the bison hunting area many tribes were regarded as composed of boys, young men, warriors, and old men, each class having certain privileges and duties.

It so happens that in several parts of the world where such age-grades are recognized, we find a series of men's societies organized from these different age-ranks, and in the aggregate presenting the example of a series of societies, membership in which is restricted to separate life periods. In such a system, one would begin by joining a boys' society and so gradually pass at the proper age to the next higher and so on through life.²³ The attention given this subject by many writers elevates it to one of great theoretical importance, but so far the phenomenon of age-graded societies appears in the New World only in the bison area. Lowie,²⁴ who is the most recent student of this

subject, makes a good case for its independent origin in this small locality, suggesting that it is here at least merely the accidental outgrowth of the more fundamental tendency to segregate according to age.

TOTEMIC FEATURES

There is one aspect of social grouping that deserves further notice, even in such a brief account as this. The terms totem and totemism have come to stand for a distinct body of literature and indicate a respectable complex of sociological theory. If, for example, we review the recognized names people give to their clans and gentes, most of them are seen to be derived from the names for animals. Thus Morgan,²⁵ the great pioneer in this field, finds the Iroquois to have the following clans: Wolf, Bear, Beaver, Turtle, Deer, Snipe, Heron, Hawk.

Similar naming systems are found among nearly all the clan peoples of North America, but it is not so clear that this is equally true of those having gentes.

The significant point, however, is taken to be the meaning of this animal name. In almost every case it can be explained only by the mythical narrative accounting for the origin of the group in question, which deals with an animal-like being to whom the origin of the organization is ascribed, if indeed this being is not the true initial parent. The result is that if this being should be in some way associated with the black bear, for example, the people of the group would call themselves the black bear clan and would look upon all such bears as related to them. In short, the bear, or a bear, would come to be the totem of the group.²⁶ As the discussion of this subject will require some data on religion and mythology, we may best postpone its further consideration.

Our previous citations of the associations between marriage restrictions and the clan-gens system may prepare us

for further complications, for the conception of a clan-gens ancestor and the group animal name will bring the totem into prominence when marriage systems are considered. To this association, we shall revert in a succeeding chapter. One of the important problems for us, here, is the place and manner of origin for the New World totemic complex. This, like many others of its kind, must rest with the future. So far, analytic studies have shown that the various systems of totemic practices growing up around these ancestral and other concepts have different historical origins and so are not to be explained as instinctive or as diffused from a common center; yet, it cannot be denied that the sameness of the underlying concepts throughout the New World must be accounted for by one or the other of these hypotheses.²⁷ From its distribution, we have a strong presumption that the New World clan or gens system is a correlate of higher political and industrial organization, since it is among the loosely organized tribes that it does not occur, but just where the totemic factor enters the complex is not clear.

In closing this brief glance at the social grouping of aboriginal man in the New World, we may be impressed with the tendency for each social feature to localize. Thus, whether it be merely a matter of terminology for uncles and aunts, methods of regulating marriage, or what not, we find it not scattered up and down the Americas at random, but gathered into more or less distinct geographical areas. It is this observed geographical distribution of the several social groupings we have noted in the New World that suggests their historical origin in opposition to an innate one. It is now clear that we may have an evolution of society that is determined by the conditions of the time and place and not by the inborn traits of the people producing it. This seems to be the most satisfactory interpretation of the

data on social grouping, for more complete knowledge makes it impossible to believe that the bands, clans, gentes, etc., have a definite place in the mere organic evolution of peoples in the New World.

1. Joyce, 1912. I.
2. Bandelier, 1879. I.
3. Parker, 1916. I; Morgan, 1904. I.
4. Morgan, 1870. I; 1878. I; 1904. I.
5. Bandelier, 1879. I.
6. Rivers, 1914. I.
7. Lowie, 1914. I; 1916. I; 1920. I; Goldenweiser, 1914. I; Swanton, 1905. I; 1906. I.
8. Goldenweiser, 1914. I.
9. Kroeber, 1917. I.
10. Morgan, 1904. I.
11. Skinner, 1913. I.
12. Murie, 1914. I.
13. Dorsey, J. O., 1897. I.
14. Gifford, 1916. I.
15. Morgan, 1904. I.
16. Lowie, 1914. I.
17. Stefánsson, 1914. I, p. 331.
18. Lowie, 1915. I; 1916. I; 1917. I; Rivers, 1914. I; Spier, 1925. I.
19. Tylor (no date).
20. Kane, 1859. I; Lowie, 1920. I.
21. Markham, 1910. I, p. 161.
22. Bandelier, 1879. I.
23. Lowie, 1916. II; Rivers, 1914. I; Schurtz, 1902. I; Webster, 1908. I.
24. Lowie, 1916. II.
25. Morgan, 1904. I, p. 75.
26. Frazer, 1910. I.
27. Goldenweiser, 1910. I.

CHAPTER XI

SOCIAL REGULATION

THIS work can scarcely be considered complete without some more definite discussion of social control. With the general modes of control, such as are almost universal among mankind, we have nothing to do, such subjects properly belonging to sociology, our concern being with the particular machinery by which this control is exercised. When a man commits a crime his social group is presented with a problem for which the mode of attack is already conventionalized. To meet such contingencies the highly organized governments of Peru and Mexico maintained complex judicial systems. In the former country each village had its appointed judge to whom the inspectors, or disciplinarians, reported all irregularities. There was one of these inspectors for each recognized social unit.¹ The village judge dealt with all such cases and levied the punishments, usually beating or whipping, and, if the code required, execution. It seems, however, that these petty magistrates were not permitted to try important cases, particularly those which we class as civil. At regular periods officials from the capital visited each province and held court for the presentation of complaints and petitions. Though the data leave us in doubt, they imply that appeals from the decisions of the local magistrate could be filed in this court. At any rate, these traveling judicial inspectors reported back to the supreme judicial bureau, which body, in turn, delegated judges to visit the locality of the petitioner and try the case.

For the Nahua system we have abundant data in so far

as they apply to the City of Mexico.² Here the *calpulli*, or gens, had representatives who sat as a lower court before whom all irregularities were presented by the proper officers; but all their important decisions were passed up to a higher court, consisting of a number of judges appointed by the ruler. These held court daily in a special chamber of the palace. In addition, there seems to have been a special body of thirteen judges who sat with the ruler at stated periods for the review of unusually important cases. Finally, there was a grand chief justice who stood as the responsible head of the system. To what extent the subject cities and provinces shared in this system is not clear, but we are informed that their local courts were required to refer their decisions to the higher courts of Mexico City. For the earlier Maya we have very little data, but since their culture was of a high order and contributed liberally to the later Nahuatl, we may safely assume an almost equally complex system.

In the preceding chapter, we noted a striking similarity in the social organizations of Peru and Mexico in that their political complexes were built of gens-like units. Here we see that their judicial systems also were based upon these same units, for at the bottom were the courts or magistrates for the gens, subordinate to the magistrates of the governing gens. In the same way that a single warlike gens built up a political complex by subjecting other gens or groups of gens to its rule, it also erected a system of control and discipline. We may anticipate, therefore, that as we leave these centers of military culture we shall find little more than the separate individual gens systems. For example, south of Peru were the Araucans with a loose political system; and here we are told the "law of revenge" was supreme, that is, the individual was his own judge and executioner. Colombia and Ecuador doubtless had something of a judicial system, but elsewhere in South America

we find only simple tribal groups where folk justice was free from all restraints.

Turning back to North America and beginning at the farthest north with the extremely simple culture of the Eskimo, we find a considerable body of regulations, as must be the case in any well-formed culture, but still no effective judicial machinery to enforce them. If a man finds his conventional rights trod upon, he has no recourse except to resort to blood vengeance. Yet, we do find incipient judicial procedure, for among the Hudson Bay Eskimo the men of a group may, in consultation, condemn an obnoxious individual and arrange for some one to dispatch him at the first opportunity.³ Again, in Greenland there is a definite mode of dealing with an offender by challenging him to a public contest in which he is made to face his opponent who sings derisive songs specifying his misdeeds.⁴ Such ordeals are not only used in case of theft and murder, but even to discipline a lazy or incompetent person.

In the great interior of Canada among the Déné tribes and eastward, the fundamental legal procedure was about as above, each group of people being informally dominated by one or more head men who exercised whatever judicial functions there were. The same can be said of the interior salmon area; but throughout, the right of blood vengeance was recognized. For example, we are told that among the Shoshoni the head man, or chief, did not concern himself with murders, but left that to the injured party.⁵

In general, we can say that this loose type of personal freedom to revenge, without definite judicial procedure, is distributed from southern California northward through the Plateaus, the Plains, Canada, Alaska, and Greenland. However, in Washington, Oregon, northern California, and practically everywhere in the Plains, we find the idea of compounding, or paying the injured party. Referring to

the map for social groups, we note that this distribution follows closely the limits of the simple band, or village type of grouping.

Turning now to the regions manifesting gens and clan organizations, we note that in the North Pacific Coast area there is little to add, except that the idea of compounding by gifts of property or slaves is rather prominent. When a murder is committed, the essential payment is a life of equal rank, but this applies when the parties are of different families, whereas, within the family, the family chief adjusts the case. In short, the blood vengeance again holds here and a distinct judicial procedure has so far not been brought to notice, nor do we hear of police officers. On the other hand, the blood vengeance was so far formalized that the taking of a life by the injured party closed the incident and did not lead to an endless chain of murders.

Shifting eastward to the great gens area around the upper Mississippi and the Great Lakes, we find something more elaborate. In the first place, the Siouan group of tribes clustering around the Missouri had a well-developed police system which, however, had no definite relation to a gens group, but was initiated and controlled by a governing head for the whole tribal group of gentes.⁶ A further peculiarity of this is that such a government was transitory or periodical, being called into life each spring and ending with the last fall bison hunt. For the gens itself there was no judicial system other than the individual acts of its members. About the only formal procedure was one that seems genetically related to the calumet idea; for example, certain head men could wave a pipe over contending parties who were then bound to desist or to be set upon by the community.

Turning now to the Algonkin-speaking tribes occupying the greater part of the Ohio and St. Lawrence drainage, we find no trace of a police system except among a few groups

in immediate contact with the Siouans. On the other hand, we seem to have a more sharply defined gens system in which the idea that the gens is responsible for the acts of a member is clearly formalized. Yet, we cannot be sure as to this, since in many cases, as, for example, among the Ojibway, where the gens lines do not correspond to the local grouping and the local group seems itself to be the judicial unit. So it may turn out that what we have here is merely an emphasized idea of the community's responsibility, a factor common in some degree to all parts of the world. The most interesting point here, however, is a highly formalized procedure which constitutes a kind of trial under the authority of the chief and the shaman.⁷ The principle of procedure is that the friends and relatives of the deceased are persuaded by gifts and speeches to forgive the offense. If they cannot be so persuaded, the prisoner is executed at once. This precise form of judicial procedure is found among the Ojibway and Micmac, with suggestions of it throughout the whole stretch of Algonkin peoples. The Iroquois also had formal trials, but the procedure was different; witches, for example, were tried before the council, a regularly constituted body, but murderers were subject to immediate revenge by the injured family, unless a peace token was offered. Yet, the council could intercede and try to mediate. This failing, the aggrieved were left free to exercise their right, which in turn might call for retaliation.⁸

As to the tribes of the Gulf States who had progressed so far as to form strong confederacies, and where we have reason to expect some judicial system, no very exact statement can be made. We infer from the available sources that murders and lesser crimes were left to adjustment by the interested parties, blood vengeance being the rule.⁹ It is true that the village government seems to have had a few police officers, but these were to preserve order at ceremonies

and to regulate labor in the communal fields, not to punish offenses against the individual. However, as to trials and formal methods of adjusting crimes, we are left with the impression that in this particular the tribes of the south were far behind their northern neighbors. We should not forget, however, that this may be an unjust estimate arising from inadequate data. One judicial principle strongly developed in the south is that the murderer shall be killed in precisely the same way as his victim, and this, again, holds for the Iroquois, but not for the surrounding Algonkin tribes.

There remains but one more area in North America, *viz.*, southwestern United States. Among the less sedentary peoples, as the Apache and Navajo, the idea of compensation for murder and minor injuries prevailed. Adjustments were usually made in public, but the decision seems to have rested with the injured party. They could, if they chose, exercise the right of vengeance, but the other side was then free to retaliate. For the Pueblo peoples proper we lack adequate data, but the inference is that the paying of an indemnity was universal.¹⁰ In general, the governing machinery of these villages seems to have been directed toward religious ends rather than otherwise and so to a large extent rests with the few properly accredited officials. It is true that there was a constant night patrol of the villages and on ceremonial occasions a day police, but that these officers acted in case of murder or theft is improbable.

Now that we are at the end of this somewhat tedious survey, we may summarize the data, meager though they be. In the first place, it is only the complex governments of Peru and Mexico that exercised systematic judicial functions in what we consider criminal cases. Almost everywhere else the family group, the gens or clan, as the case may be, was left to its own devices in meeting such situations. There were always conventional ways of proceeding,

but these were almost entirely outside the jurisdiction of the tribal government. Everywhere, of course, the concept of "life for life" is entertained, but the tendency in the New World is for the true blood feud to be found among those tribes having the simplest family organizations, whose distribution is shown on our map for social grouping; while in the regions of clans and gentes provision is made for compensating the injured parties either by a single execution, for which no retaliation is permitted or by the payment of an indemnity. That this seemingly close correlation indicates a true functional relation between the two is doubtful, since it may be largely a matter of geographical segregation; yet, there remains the undeniable fact that at least the conventional methods of dealing with crime have geographical distributions in every way comparable to those for other traits of culture. Hence, their presence in any given locality is to be explained by historical principles and not as due to inherent reactions. The principle of "blood for blood" may be innate and consequently world-wide, but its mere presence does not account for the conventional procedures we have noted, nor for their peculiar distributions.

Like every other subject in this volume, this one admits of great elaboration, but space and time forbid more than passing notice of a few collateral practices. Thus, it often happens that the shaman in a group comes to have an official relation to its judicial system. This is particularly noticeable among the wilder peoples of South America where the shaman, or *peaiman*, becomes apprehender, judge, and executioner without check or supervision.¹¹

As we have noted, the idea of a trial in which evidence is presented does not apply to the judicial procedures we have outlined, except in the area of intense culture. Outside of this area, the only cases in which proof of guilt is sought by prosecuting parties are in the trials of witches as reported for the Iroquois and parts of the Pacific Coast. At

some of the Algonkin trials evidence might be produced to show that murder, for example, was excusable, but taking the country at large, the conventional procedures assume that the identity of the guilty is known to all concerned before the trial. Naturally, there are cases in which the identity of the criminal is in doubt, and in such a contingency the shaman may be called upon to discover him. Further, throughout both continents, and especially in eastern South America, normal death is considered as probably due to secret magic by some personal enemy, and it is the shaman's place to discover the culprit. Thus, we have no difficulty in explaining how the shaman comes into close association with the machinery of the law and how in many cases he stands as the highest exponent of authority. The regions where the shaman is most supreme are precisely those in which the blood feud is least restrained: *viz.*, the Amazon country, the Arctic coast belt, the interior of Canada, and the great western plateaus of the United States. Here he often becomes the relentless avenger, hounding the steps of the real or assumed criminal, until opportunity presents itself for his dispatch.¹²

Another subject of interest is the oath. It has been stated that nothing like an oath existed in the New World, but we do find customs that can scarcely be interpreted in any other way. Obviously they serve the same purpose. Thus, when a Blackfoot woman faces the sun in the presence of a tribal priest and says, "May I never set my foot into another snow, if, etc.," or when a Dakota, challenged as to his war record, touches a knife point held by a referee and makes a similar pledge, we have the essentials of an oath. In this connection the remarks of Garcilasso on the oath taken by a native Peruvian should be read. While this author denies that the natives swear, yet the witness said: "I wish that the earth may swallow me up alive, as I stand, in case I speak not the truth."¹³

Finally, some note should be made of the ordeal, which also had its analogous forms in this hemisphere. Throughout the interior of Canada and even among some of the Eskimo the right to a woman and other privileges is decided by a wrestling match. In parts of the Amazon country an arm or leg is plunged into a vessel filled with vicious insects to test the integrity of the individual, and again, poisonous ants are allowed to bite one to show his remorse for injury to another. If space permitted, we could work out the distributions of these practices, but we have gone far enough to reveal the character of the phenomena. Thus, we find the principles of "life for life," indemnity, social control of settlements, tests by ordeals, and oaths, in the New World as well as in the Old. Where they differ is in the conventionalized forms of procedure. There are, however, no differences common to all parts of the New World, each geographical area manifesting some individuality.

CONCEPTIONS OF PROPERTY AND INHERITANCE

From our own point of view, property may be conveniently comprehended under the classes of real and personal. Real estate, or property in lands, is with us an individual matter, but such an idea seems to have been foreign to the New World. Here the land, in so far as it was owned at all, was the property of the family group. The Nahua, with all their complexity, never got above this idea, nor did the Inca. The one fact that makes this especially clear is the entire absence of the idea of selling or conveying title to lands.¹⁴ Other kinds of property there were, which were freely given and exchanged and even levied upon by the organized governments of the central areas for taxes or tribute, yet in no case do we find evidence that this procedure extended to the land. On the other hand, the right to the exclusive use of certain plots by the social group, gens, clan, etc., was clearly recognized. Yet, the

true communal character of the system appears when we note that almost everywhere there is an annual allotment of fields to the households of the group, thus distinctly demonstrating each individual's equality in the ownership of the community land. As in most other things, the Inca and Nahua highly systematized the workings of these fundamental concepts, forming thus codes of land laws. The boundaries to the group lands were fixed and the death penalty placed upon any one tampering with them. Also, certain unoccupied lands were set aside for the support of the governing class, labor upon which was requisitioned as needed. One who reads the special literature of the subject can scarcely fail being impressed with the thorough control of agriculture exercised by these centralized powers. In each community there were officials whose duty it was to call the people to the fields, and to direct their labors. Further, if we follow out the distribution of maize culture we find associated with it practically all of the following concepts: the family ownership of land without rights of sale or conveyance, the setting aside of plots for the rulers and religious officials, and, finally, the constant control and supervision by those in authority. Yet, the non-agricultural areas have these same characteristics to a less degree; hence, it is not fair to assume that the development of agriculture was wholly responsible for the general communistic conception, a conception universal from Cape Horn to the Bering Sea. Rather should we say that this fundamental communal concept is the foundation upon which the one grand agricultural complex of the New World was reared.

Personal property in the New World consisted of houses, chattels, produce, etc. In a very considerable part of North America, at least, the house, furniture, and all food was the property of the woman, regardless of whether descent was reckoned in the male or female line. No doubt a care-

ful investigation of this subject would lead to important results, but this inquiry is for the future.

A form of property not usually recognized by us is that of the hereditary right to certain functions in the community, as the ownership of rituals for ceremonies, ceremonial songs, certain specific arts and trades, etc. While these were often hereditary to definite social groups, we frequently encounter the idea that the right can be sold or conveyed at will. Perhaps closely associated with this is the custom of formally presenting gifts which in some localities is so systematized that it becomes a mere exchange of presents. In fact, we find in the North Pacific area under the name "potlatch," a very complicated system of gifts on a loan and credit system.¹⁵

As to the rules of inheritance, little need be said here. Our previous discussions have shown that both male and female inheritance are recognized according to the respective social areas. Since land cannot well be alienated from the initial group, the rules of inheritance can only apply to personal property and privileges. As to the latter, while there is some tendency to recognize the rights of the son to his father's or maternal uncle's position in the tribe, as the particular system may require, the usual procedure is to exercise some kind of selection from the several descendants as a guarantee that a competent incumbent will be secured. This is plainly noticeable in the Inca and Nahua systems and can be safely taken as another of the fundamental elements in the social structure of the New World.

MARRIAGE REGULATIONS

As in other parts of the world, one cannot marry back into his own family nor among the immediate relatives of his parents. Beyond this, the restrictions vary as has been suggested in the preceding chapter, becoming in the main

mere conventions. Chastity before marriage seems not to have been required, but in many places was regarded as essential to certain religious functions, indicating that, after all, it was an ideal. On the other hand, adultery was severely punished when the woman was the offender, while in many tribes the male offender was regarded as innocent.

One prominent trait among the Eskimo is the exchange of wives, indulged in chiefly as a matter of hospitality. This is also found among many of the Déné tribes of Canada and an analogous custom is found in parts of the bison area. In most parts of both continents there seem to have been certain festivals during which restrictions were relaxed, but the latitude granted by all these social sanctions did not weaken the gravity of transgression under other conditions.

As to forms of marriage, it appears that the general tendency in both continents was monogamous. On the other hand, almost everywhere the custom was for chiefs, priests, and shamans to have more than one wife. In the centers of higher culture, those occupying positions of power and influence kept large establishments for women. The area in which plural marriage seems strongest is the bison area of North America, but this may be a partial exaggeration due to relatively richer data. Some reports for the Eskimo and Déné tribes indicate occasional states of plural husbands, but this appears rather as an adjustment to necessity than as an established mode of marriage. So thus, taking the New World as a whole, we find it singularly free of anything like group marriage, such as is found in the Pacific Islands and Asia. Yet we do find forms of cross-cousin marriage in California and northward into the salmon area;¹⁸ also, it has been found in Guiana, South America.

The notion that the husband of a woman acquired superior rights to his wife's sisters is found in many parts of the New World, and its natural correlate, the taking over

of a brother's or, in some cases, a maternal uncle's widow. These are particularly strong wherever plural wives are common. On the other hand, strict and universal monogamy holds for a few communities, as the Iroquois and certain Pueblo villages of southwestern United States.

Marriage ceremonies and the regulations for divorce vary greatly from tribe to tribe, making their discussion here impractical. The conventional exchange of presents previously noted is so developed in some localities as to give the impression that a man purchases his wife, but in many such cases the relatives also make an equal return as a preliminary to the ceremony. Yet, when property is given to the bride's family, whether as gift or purchase, and the woman for any cause deserts her husband, he can demand equivalent return. In Peru and Mexico the governments regulated divorce, but elsewhere the parties could separate at will, though the respective families of each party had a voice in the settlement.

EDUCATION AND GENERAL DISCIPLINE

We sometimes read specific statements that infanticide and neglect of the helpless prevailed in the New World, but a moment's reflection will make clear the improbability of either having been the rule. The exposing of infants was resorted to only in case of necessity or advisability. Thus, in the Amazon country, if the mother die soon after confinement, the child will be buried with her or otherwise disposed of, unless some woman volunteers to rear it. This seems to have been common in other regions as well, but the Eskimo visited by Stefánsson¹⁷ often exposed female infants to preserve the balance between population and sustenance. As to the aged and sick, we have the formal practice of putting to death among some of the Eskimo and Déné, a custom also found in Siberia. On the other hand, among

all hunting peoples who shift about from place to place, the infirm are often of necessity left behind to their fate. Yet the reported examples of such cruelties can usually be matched by incidents of the opposite tenor, and since the mythologies of the various tribal groups contain plots showing retribution for such cruelties, and herald the triumphs of the oppressed over the unjust, we must regard all such phenomena as exceptional.

Travelers everywhere have remarked upon the extreme indulgence toward children. This is very marked among the Eskimo, though perhaps not more so than among the Fuegians of South America. Wherever we have data, parents almost never punish or even severely reprove, but such pressure as may be needed is exercised by certain relatives. In the United States this is sometimes the clan or gens uncle of the offender, according to sex and mode of inheritance. Though our information for Peru and Mexico is in this respect vague, something similar seems to have applied there. In any case, these higher cultures had some formal provisions for training. For example, in Mexico City there were two kinds of schools, those for religious instruction and those for military training. To the former, both sexes were admitted in a manner closely analogous to the convent system of Europe. A similar custom held for the Maya and the Peruvians.

A point of special interest here is that one aspect of this cloister-like school is found in contiguous parts of North America. We note that these children, particularly the boys, went to live in the school or in barracks, or rather, they slept there of nights. This trait is particularly prominent in Maya and Nahua culture. Among the Pueblos of the Rio Grande, the kiva or ceremonial chamber was the sleeping place of males and a similar practice is found in parts of California and northward.

Outside of these regions, nothing like a school appears,

but here and there seem to have been some kind of disciplinary officials, as for example the men who superintended the morning baths of boys in the bison area. Chastising the young seems to have been practised in the centers of higher culture, but outside of these limits was practically unknown. Exceptions must be made, however, of ceremonial whippings in southeastern United States and the Amazon country. In short, the same principle applied to control of the young as to adults, *viz.*, admonition and ridicule. White people living with American natives are repeatedly astonished at their extreme sensitiveness to disapproval and ridicule. In fact, the whole control of the local group in aboriginal days seems to have been exercised by admonition and mild ridicule instead of by force and punishment. While the necessities of the case modified this in Mexico and Peru, we still note that one prominent feature of Nahua life was the elaboration of the moral lecture.¹⁸ In the Pueblo region of the Rio Grande the chiefs and head men were given to daily moral lectures, and while the custom did not appear so frequently elsewhere, it was still in evidence. Perhaps we are again dealing with a general characteristic of New World society.

In this connection some note may be taken of the ideals that were held up to the young in these lectures, particularly for boys. The Nahua put great emphasis upon the art of war, the taking of prisoners, and even of scalps.¹⁹ They maintained a series of graded war honors in the form of paint, styles of hair-cut, and finally, eagle feathers. Such ideals and customs were also prominent in all the outlying regions of lower culture, but particularly close parallels are observable in the Indians of our western plains. Yet in the matter of tribal ideals we are lamentably weak in data and can at best only infer their character and content from mythology and other secondary sources. Scarcely anyone has ever taken the trouble to record the homely re-

marks and conversations of elderly natives on what one ought to strive for in life. Nevertheless, it is plain that it is to these ideals we must look for the origin of the forces that make native cultures what they are, deep hidden undercurrents, as it were, not unlike the subconscious in one's individual mental life.

1. Joyce, 1912. I; Markham, 1910. I; Means, 1931. I.
2. Bandelier, 1879. I.
3. Boas, 1907. I, p. 117.
4. Thalbitzer, 1914. I.
5. Lowie, 1909. I; 1920. I.
6. Wissler, 1912. II.
7. Hickey, 1883. I, pp. 550-556.
8. Morgan, 1904. I, vol. 1, p. 321.
9. Adair, 1775. I; Cushman, 1899. I.
10. Bandelier, 1890. I, p. 205.
11. Im Thurn, 1883. I.
12. Im Thurn, 1883. I.
13. Garcilasso, 1688. I.
14. Bandelier, 1878. I.
15. Boas, 1897. II.
16. Kroeber, 1925. I.
17. Stefánsson, 1914. I; 1919. I.
18. Barnes, E. and M. S., 1896. I; Sahagun, 1880. I.
19. Sahagun, 1880. I, p. 58.

CHAPTER XII

RITUALISTIC OBSERVANCES

FORMAL ceremonialism, or ritualism, was developed to an unusual degree in the New World. The high poetic feeling of the natives and their fondness for symbolism is strikingly reflected in their tribal mythologies. This also finds expression in formal and ritualistic procedures, usually in connection with songs. However, before entering into generalizations on American ritualism we must review some of its typical forms.

In the regions of higher culture we find the political organization closely paralleled by a priestly hierarchy. Thus, in Peru, the priest of the sun at Cuzco, a near relative of the ruler, was the head of the religious system, and for each province another member of the family served as a sub-priest. Under each of the latter was a complex of priestly offices and functions. The ruler himself was a sacred person not to be looked upon by common men. The supreme power was conceived as resting in a culture hero, commonly passing under the name, Viracocha, though a number of other names appear in the literature of the subject, with somewhat contradictory attributes, seemingly due to original differences between the older creator gods for the several localities, differences which the Inca conquest could not entirely eradicate. The true Viracocha seems to have been a white man with a long gray beard, whose acts and disappearance have a curious resemblance to those of similar characters in the mythologies of the wilder peoples of both continents. That Viracocha was a highly personal

and spiritual being is shown by one of the Inca prayers to him as translated by Sir Clements Markham.¹

Next in rank to Viracocha were the heavenly bodies of which the sun was the most significant. The moon, the earth (All-Mother), and on the coast, the sea (Mother Sea), were also of great importance. As a rule, temples and priests were for these gods only and not for Viracocha, the creator of culture. Sacrifices and gifts were likewise to them and not to the latter. Below these gods stood innumerable objects invested with *huaca*, a term difficult to define, but seemingly equivalent to *wakan* and *manitou*, as used by the wilder tribes of North America. All these objects, or *huaca*, were the places of sacrifice and observance for which priests were detailed.

From what we know of Chibcha, Maya, and Nahua religions, this outline of Inca beliefs will serve as the type. Each had its creator, then the heavenly bodies to which sacrifices were made, and lastly a long array of fetish-like objects invested with some holy quality. Throughout, the political functions of the rulers were so closely intertwined with the priestly functions, that a strict separation of them is quite impossible. Thus, the Maya system provided a religious program for each day in the year, or a complete cycle of never-ending services. The great Maya calendar is essentially the recorded order of these ceremonies, rather than a dating device, the day being named after the god to be recognized in its particular form of worship. That an analogous calendar existed in Peru is most certain, but seems lost beyond recovery.

The present status of our subject makes it difficult to truly characterize the ceremonial patterns for these four great centers, but certain striking features may be noted. The Maya and Nahua are notorious for the extent of their human sacrifice systems. One common form of such sacrifice was to bind the victim to a frame or pole and shoot

him full of darts. This was a custom in Colombia also. For Peru there is conflicting evidence, the Inca being credited with prohibiting the practice by some authorities, but it is clear that the custom did prevail at one time. We may infer, therefore, that such sacrifices were fundamental traits among the many small social groups from which these great military empires were built up. Human sacrifice, however, appears but as an exceptional element in a larger complex, for from Mexico to Chile throughout, there was a daily round of sacrifices of animals, birds, fruits, and inanimate objects.

It has frequently been remarked how the great historic cultures grew up around lakes or water holes which in consequence came to be sacrificial shrines. The most famous of these are Guatovita and Titicaca in South America. Among other ceremonial features of comparative interest are the conception of a "maize mother," the snake cults, the foot races, and the new-fire ceremonies. Of great festivals we have in Peru the June sun ceremony and in August that for driving out disease.

For the other parts of South America, we have but meager information. One striking feature in the Amazon region is the taboo against women, who are not permitted to take part or even to see the objects used in important ceremonies. Thus, it is stated that all women of the Uaupés tribe who happen to see the leading mask in their tribal ceremony must be executed, as required by the ritual. This masked ritualistic procedure is found throughout the whole of Brazil and has some curious analogies to a Pacific Island ceremony. This is also the land of the couvade, that curious procedure in which the father is put to bed at the birth of a child, which has received undue attention in sociological literature.² The other most universal ritualistic idea is that of the ceremonial whipping, usually a part of the puberty ceremony for both girls and boys, but also found

in certain public dances of adults. Agricultural rituals are also in evidence, the two most distinctive being the manioc and the pineapple harvests.

Turning now to North America, we find a new-fire ceremony among the Mexicans, but here it occurs every fifty-two years, on the day marking the completion of the calendar cycle. Again, every eight years the Atamalqualiztli ceremony was performed, a kind of fasting observance, but also the occasion when a peculiar cult, called Mazateca, danced about with live frogs and snakes in their mouths, somewhat like the Hopi of Arizona. In addition, each month and day of the year had its more or less elaborate ceremonies, but to outline the whole gamut of Mexican and Maya gods would take us too far afield. Joyce³ believes that the bewildering multiplicity of Mexican gods is in part due to the Aztec having assimilated the respective religious systems of conquered cities; yet the Maya seem almost equally complex in their supernatural hierarchy. In both the Aztec and Maya systems there was a powerful god with a beard, resembling Viracocha of Peru, who was also the creator, but of very high rank; he was the sun and the god of thunder and rain. Particularly prominent were the star gods, of whom Venus seems to have been the most adored.

Just north of the Aztec are the Pueblo Indians of south-western United States who have preserved the greater part of their prehistoric religious culture even down to this day and time. Hence, among these eminently conservative villages we may look for hints as to what formerly underlay the systematized religious cultures further south. Thus, the Hopi, who seem to be typical, have a large number of definite priestly organizations, each of which administers special and distinct rituals. To one is assigned astronomical observations and the keeping of the calendar, another is charged with snake worship, etc. The appearance of the

clouds, the rain, maize planting, in short, the whole round of daily life is accompanied by ritualistic procedures, each group of priests performing its part at the appointed time. While essentially magical, these rituals contain a large amount of practical knowledge as to the care of seed, time and place of planting, etc. The supernatural hierarchy is composed of numerous gods among which are the sun, the goddess of all hardness, the spider goddess, the horned serpent, the thunder, and the four world quarters. Formerly, some forms of human sacrifice seem to have been practised among the Rio Grande Pueblos and even in very recent times certain newly-born were fed to sacred snakes. The ceremonial footrace is also found, and even the kindling of new fire.

If now we turn to the maize-raising tribes of central and eastern United States, we note certain similarities in the ritualistic procedures. Thus, the Pawnee had a human sacrifice and a whole yearly cycle of ceremonies centering around the cultivation of maize. On the lower Mississippi were temples to the sun to whom the rulers bore a relation not unlike that of the Inca.⁴ Even the South American practice of bearing the ruler in a litter was also found here. The widespread use of the "black drink," a purifying emetic, also reminds one of Pueblo practices. Finally, certain special maize ceremonies are found throughout the whole extent of maize culture, though the farther we get from Mexico and Peru, the weaker these become.

Among the Central Algonkin tribes of the Great Lakes we have another ritualistic form in the sense that it does not pertain to agriculture or to a yearly cycle. Its most complete expression seems to be the Midé ritual which concerns itself with the spiritual relations between the individual and the powers above.⁵ The spectacular public performance of pretending to pass, or "shoot" a shell into the initiate is the best known objective feature of this ceremony.

Important parts of the ritual are recorded on bark tablets so that we see here also the beginnings of written records.

In the Plains area, beyond the encroachments of maize culture, we have the sun dance festival which seems to have been the occasion for the fulfilling of conventional vows made during the preceding year, but we also have a considerable development of the ceremonial pipe ritual, shared with certain contiguous tribes to the east. In California, ritualistic performance is very inconspicuous, which in contrast to what is observed elsewhere presents this culture as one of very little interest here.

The only other part of North America where ritualism is prominent is among the Pacific Coast tribes of Canada and southern Alaska. Here, perhaps more than elsewhere, the social group, clan or gens, is the keeper of special rituals and is wholly responsible for the ceremonies based upon the same. One idea, or pattern, seems to dominate these rituals, *viz.*, the paying of proper homage to one's supernatural clan ancestors. In fact, the ritualistic ceremonies of the whole salmon area are little more than staged demonstrations of the clan, or family, origin myth. The principal features of these "ritualistic plays" are the impersonations of the animal-like monsters who are the true heroes of the myths. For this very elaborate masks are prepared, some of which have movable eyes, ears, or jaws, as the case may require.⁶ Collections of these masks are to be found in our large museums, where they stand as objective data as to what the native conceives his gods to be like. Masks are used elsewhere, even among the Aztec and Inca, but among the wilder tribes are not highly developed as here on the coast of the salmon area.

The whole subject of ritualism in the New World is too complicated to give an adequate view of it in a single chapter. Yet, from even this superficial sketch it appears that the phenomenon is strongest in Mexico and Peru, or

the regions of highest culture, and that as we go outward in both continents from these centers, ritualism becomes less and less conspicuous. If we consider the United States and Canada only, it appears strongest in the centers of clan organization. Another general characteristic of New World ritualism is that wherever it appears, these rituals are the formalized narratives of an assumed supernatural, or spirit revelation, from the gods. The tracing out of the distribution of these rituals over the several areas of the New World is destined to become one of the most important problems of our subject and promises to reveal in the most satisfactory way the earlier historical contacts of the various existing tribes.

SUPERNATURAL GUARDIANS AND TOTEMISM

Under the head of Social Grouping we enumerated the most striking totemic features associated with clans and gentes, but the totemic complex is also intimately bound up with the very fundamental trait of individual guardians. This trait is particularly strong among the bison hunters but far from infrequent elsewhere. It is usually one of the equipments of a warrior which youths acquire by fasting and spiritual endeavors. The procedure usually takes this form: if a youth does not have a dream or vision which his superiors regard as supernatural, he is instructed and prepared for the inducing of such an experience and left in a lonely place to fast and pray, day and night. If a spirit appears, it is usually in animal form and that animal becomes in a sense the individual guardian of the supplicant. This guardian is, however, conceived of as a spirit and not merely as a bear, eagle, wolf, etc., which are after all, but the objective links between the individual and the source of spiritual power. A very considerable number of objects in our museum collections are the material bonds between warriors and these personal guardians, usually

classed under the technical name of medicine objects, or charms. Particularly among the tribes of the Mississippi Valley, these often form small bundles with short rituals and in some cases we find these accompanied by series of larger and more complex bundles often rising to the level of tribal ceremonies. The Pawnee, for example, have a hierarchy of these bundles extending from the tribe down to family groups. The center for this special bundle development seems to be about the Great Lakes in the Central Algonkin sphere of influence, but it has its analogies in the tribes of the Lower Mississippi and the Pueblos of the Rio Grande. Further, we note that certain Aztec legends mention two bundles miraculously handed down to the people in the days of their tribal migrations. Each of the two main divisions of the Aztec took one of these bundles for its chief guidance. As to the contents of these bundles, we are not fully enlightened, but one contained a crystal of some kind and the other a set of fire sticks, reminding us of Pawnee bundles. We must suspect, therefore, that the ritualistic bundle is an old and fundamental development in North American culture, and that it is based upon the much less specialized and more widely distributed concept of the individual guardian.

In the extended discussions of totemism by Frazer⁷ and others this generalized concept of the relation between the New World native and his animal-like guardians is elevated to the plane of an explanatory theory, often called the "American theory of totemic origin." However, the leading American students of the subject are disposed to regard this theory as accounting for facts peculiar to the New World totemic systems rather than as universal in application. Even in the New World, exceptions have been cited to show that similar totemic complexes seem to have had very different histories and so have superficial similarity. Facts of this tenor have led to the interpretation⁸

that the phenomenon of totemism is little more than the incidental association between individuals or kinship groups and animal-like guardians, exogamous or analogous restrictions to marriage, ceremonial privileges, etc. The conception is that in this manner were accidentally formed tribal complexes of varying content which we class together under the name totemism because they have some elements in common. Like the other culture traits we have discussed, these complexes show a geographical grouping and so fall into more or less localized types.

SHAMANISM

The medicineman, or as he is sometimes called, the shaman, occupies a large place in our literature. Some writers⁹ give this functionary the chief place in all religious and ceremonial activities, thus making shamanism synonymous with religion. While it is conceivable that shamanism can be so defined as to include all religion, we must not overlook the fact that the medicineman of the New World is not the priest. A large number of tribes have distinct names for each and their cultures give them distinct and sometimes antagonistic functions. It is the shaman rather than the priest who is called upon to treat the sick, to foretell the future, etc. The priest is essentially the keeper and demonstrator of rituals, his right to do so arising chiefly from his mere knowledge of the subject, but the native conception of the shaman is one who works directly by virtue of some extra-human power. Consequently, it is the shaman who goes into trances and mystifies by jugglery, not the priest.

The importance of this distinction appears when we consider its wide distribution. For the three great centers of higher culture, Inca, Chibcha, and Maya-Nahua, we have far less data than for some of the wilder peoples, but what are available reveal a distinction between the two.

The priests of these cultures were organized, as we have noted, in a manner comparable to and complementary to the political scheme, but the shaman class appears as unorganized and in some cases is described as itinerant. In Peru, they were sometimes given a room in the outer precincts of the temple where those who so desired could consult them. In the Mississippi Valley and the Great Lakes region, we have fewer organized cultures, but among the Pawnee and Ojibway, for example, the distinction is sharply made, as also appears to be the case on the Atlantic seaboard. In the great plateau region, we find among the Shoshoni a less formalized, but still perceptible distinction, while among the Navajo and Apache of the south, the line is again sharply drawn. In central California, the distinction vanishes, but appears in the mixed cultures of the north and south. Again, on the Northwest Coast, the priest and the shaman are distinguished one from the other.

On the other hand, we find the Eskimo *angakok* to be both the shaman and the priest. In the great Déné area of Canada, practically the same condition holds as for the Eskimo and an analogous one for some of the Cree. Turning back to South America, we meet with the undifferentiated priest in the Amazon country under the names, *page*, *paye*, *kenaima*, etc. For each group there is usually one such who performs all priestly and shamanistic functions.

Supplementary to our previous discussion of rituals it may be noted that the differentiation of the priest from the shaman occurs wherever ritualism is highly developed. While it is true that we cannot always draw a definite line between priestly and shamanistic activities, the rule is for all tribes having well-formed rituals themselves clearly to differentiate two sets of individuals, priests and shamans. We cannot therefore ignore this fact in our consideration of the subject.

As we have stated, the shaman is usually the doctor,

prophet, and seer. In native theory, he gets his powers not by training, but by direct transmission from some extra-human source. He is credited with the ability to perform extraordinary feats which we call jugglery. Some of these tricks fall into type classes with continuous geographical distributions. Thus, among the Ojibway and other Central Algonkin tribes, we find a form of the rope-tying trick which extends northward among some of the Déné to the Eskimo. Centering among the Siouan tribes of the bison area, we find the handling of fire and the plunging of the hand into boiling water. Forms of the sword-swallowing trick were found among the eastern tribes from the Lakes to the Gulf and on into the Pueblo area of the Southwest. In the Amazon country, the special feature is a kind of ventriloquism in which animals and men carry on conversations with the shaman in almost the same fashion as the *jesako* of the Central Algonkin.¹⁰ A plant-growing trick comparable to that of the Hindu fakir was found among the Navajo, Pawnee,¹¹ and a few neighboring tribes. Other distributions could be cited, but we have gone far enough to reveal the geographical character of the phenomenon.

When a shaman undertakes to treat the sick, he frequently pretends to suck out the cause of disease through a tube. This trick has been reported from the whole of the New World except probably the region of highest culture and the Eskimo.¹² The use of a calabash rattle is also found throughout the Amazon area, the whole of the Pueblo and bison areas, though in the latter the bulb is often fashioned of rawhide. This distribution also extends up through the Columbia River Basin into the North Pacific Coast where rattles are made of wood, but still of the same essential form.

Though the individualism of the shaman is apparent, there does appear a tendency for the formation of cults, the best examples of which are the *wabano* and *jesako* cults

of the Central Algonkin, the *heyoka* of the Siouan tribes, and the animal lodges of the Caddoan.¹³ In nearly every case, these take the form of a group of followers with a single leader, each group specializing in certain devices and tricks.

As we have noted, these tricks are not strictly confined to shamanism, but occasionally occur in priestly organizations. One of the best known examples is found in the Hopi snake and antelope society, whose members perform tricks with rattlesnakes; among others are the shell-shooting feat of the Central Algonkin *midéwin*, and the dog-eating of the Nootka cannibal society. These tricks are, however, integral parts of the respective rituals and form a large portion of the public part of the ceremonies.

In literature the term shamanism specifically applies to the religious culture of Siberia. There we find a complicated conception of seventeen or more worlds in one of which human beings reside. Communication between these worlds can be made only through shamans conversing with the spirits of the dead. The typical shamanistic feats in Siberia are states of ecstasy, trembling, sweating, contortions, ravings, fits, etc. The shaman of the New World also manifests many of these reactions, particularly in those regions where there are no separate priests. The trances and ravings of the Eskimo *angakok* and the Tlingit doctor have an intensity comparable to those of the Siberian shaman, apparently much more so than have the methods of the *paga* in the Amazon country. Yet, these abnormal psychic activities are to some degree the stock in trade of all shamans, only that when ritualism rises, they become relatively less important.

Turning now to the priesthood, we find it most characteristic of the Inca, Chibcha, and Maya-Nahua centers. The priestcraft of the Maya, for example, illustrates the maximum development of ritualism where each day and night

in the yearly cycle had its required rituals. Of the intermediate tribes, we may cite the Pueblo of the north with their far less elaborate, but yet complete, yearly round of ceremony and on the south the Araucans of Chile who make sacrificial offerings at every turn. The tribes of the lower Mississippi had also a ceremonial cycle and maintained rude temples as did also the natives of the West Indies. But as we move outward in both continents from these centers, the rituals quickly shrink to a small residue, with the exception that on the North Pacific Coast they are to a degree recurrent. In view of all this, one cannot escape the conviction that the existence of the great Inca and Maya centers of priestcraft is responsible for many specific features of New World ritualism. In these centers, one of the chief functions of the priests was the making of sacrifices. Innumerable birds, rabbits, fruits, and even leaves of plants were offered up from day to day in one ceaseless round. The occasional human sacrifice was but an incident in an otherwise steady flow of sacrificial blood. This, like other aspects of ritualism, rapidly shrinks as we move outward but, far up among the Pawnee, we find offerings of animal and human blood and likewise among the Araucan and other Chaco tribes of the south. The Maya and Nahua priests offered their own blood upon blades of grass and also far up in the bison area devotees cut off bits of flesh or even fingers to offer the sun and again the extinct Charrua of the Chaco are said to have offered up fingers in much the same way.

What we have then is a great center of rank growth in priestcraft with a ponderous system of blood sacrifice, the influence of which wanes as we move outward. The fact that the shaman lagged behind and shared but little in this elaboration would seem further basis for the assumption that the chief formative factors in priestcraft and ritualism are not found in shamanism. The shaman gets his power

by an extraordinary experience. He usually seeks it in fasting and prayer; whence, if his tortured nervous system bring the desired illusion, he goes out among his fellows with the faith and confidence that convinces. While he has a great deal to learn from his fellow shamans, such learning is quite secondary and dispensable. The priest, on the other hand, may also fast and be fired with faith and zeal, but this is secondary to him, for he must master with infinite detail the arbitrary forms of rituals. In last analysis, the priest must be a man of intellect; the shaman may be a veritable idiot.

THE PERSONAL RELATION IN RITUALISM

While many anthropologists object to the view that all New World religion springs from the conceived relation between the shaman and the source of his power, it may be conceded that an analogous relation does hold for the masses. Thus, among many tribes, it is not merely the shaman who goes out to fast and pray, but practically every individual, at least once in his life, such a procedure being one of the essential equipments of youth for the duties of life, as noted under our discussion of the individual guardian. This trait is prominent among the more warlike tribes of the bison area, the eastern maize area, and the guanaco area of South America, in all of which one of the primary equipments of the would-be warrior is to secure a personal guardian spirit, or power. Under the tutelage of a shaman he fasts, prays, or tortures himself as his tribal convention may demand, until he either has a visitation or gives up in despair. The attending shaman usually assists in formalizing a kind of personal rite which remains a more or less secret individual formula. In most cases, it is in animal form that the visitation comes, a speaking and otherwise human animal, which belief is no doubt intimately related to the great prevalence of animal tales in New

World mythology. In this meeting, some specific protection is promised the penitent for the remainder of his life. A man may repeat these fasts and ultimately secure a great variety of such guardians and eventually be recognized as a shaman, though one usually becomes a shaman by virtue of some one remarkable experience. This personal relation of an individual to his mentor is the fundamental concept in New World religion and ritualistic procedure. In fact, where rituals have been carefully studied, we find their reported origins to have been in the unusual experience of a single individual; hence, we can safely say that a typical New World ceremony is the performing of a ritual demonstrating this initial experience and that the concept of the individual guardian underlies the whole. While the ideal thing would be to close this discussion with the presentation of a type ritual, the limitations of space forbid. The reader may, however, be referred to Dorsey's "Arapaho Sun Dance,"¹⁴ Hoffman's "Midéwiwin or 'Grand Medicine Society' of the Ojibway,"¹⁵ or the author's "Ceremonial Bundles of the Blackfoot Indians."¹⁶ These will give examples typical of the United States and Canada and when sufficiently generalized, will be representative of the whole of the New World, tentatively, however, since our data from the southern continent are meager.

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| 1. Markham, 1910, I, p. 100. | 9. Radin, 1914. I. |
| 2. Tylor (no date). | 10. Hoffman, 1891. I. |
| 3. Joyce, 1920. I. | 11. Grinnell, 1893. I. |
| 4. Swanton, 1911. I. | 12. Tylor (no date). |
| 5. Hoffman, 1891. I; Radin, 1914. I. | 13. Murie, 1914. I; Hoffman, 1891. I; Dorsey, J. O., 1894. I. |
| 6. Boas, 1897. II; 1909. I. | 14. Dorsey, G. A., 1903. I; Spier, 1921. I. |
| 7. Frazer, 1910. I; Durkheim (no date). | 15. Hoffman, 1891. I. |
| 8. Boas, 1916. I, p. 323. | 16. Wissler, 1912. II. |

CHAPTER XIII

MYTHOLOGY

UNDER the general name of folklore, we have a more or less distinct department of inquiry, with its own particular societies and journals whose supporters consider the whole unwritten literature of the earth as their province, whether it pertains to primitive groups or to the most advanced nations. However, in our country, the American Folk-Lore Society has given its attention almost wholly to the mythology of the aborigines. Every such tribe, so far examined, has been found to possess two kinds of tales, those referring to a previous order of events, and those having to do with the present. The latter take the form of anecdotes, hero tales, etc., and, regardless of the many fictitious elements they contain, have the form of narratives of real events. The former deal with a period in which the world was taking shape and the present order of things evolving. While it may be true that a tribe will regard one of these two classes of tales as worthy of belief as the other, they yet recognize them as different. In this volume we shall designate as myths all tales that deal with this mythical pre-world, or that partake of the mythical style.

In the first place, the myths of the world embody one universal feature: namely, that the animals and heavenly bodies are endowed with human qualities and associate with man indiscriminately. One can scarcely find a well-developed tale in which animals, heavenly bodies, or both, together, do not play the part of human beings. Another peculiarity is that but rarely do any of these tales convey a moral or even pretend to exemplify worthy ideals. In

fact, we often find the standard of ethics and morals of the tales much at variance with the tribe of the narrator. On the other hand, these tales frequently profess to convey information as to the origins of specific features in the modern world. Thus, the alternation of day and night is, in some cases, explained as due to the original theft of daylight by a culture hero, who, finding himself closely pursued, casts out the daylight bit by bit. Again, the markings in the bark of the birch trees are explained on the ground that once a culture hero in anger gashed the tree with his knife. Yet, if we take native myths as they come, such explanations much more often apply to peculiarities of the heavens and the markings upon birds and animals than to other classes of phenomena. Another peculiarity is that the initial creation of the world is a single incident, generally disposed of in a single simple narrative, whereas we find many complex independent tales, each accounting for more or less trivial animal markings. Waterman¹ has discussed this diffuse explanatory character of American tales under the designation, explanatory element. The important problem is as to whether these tales were originally composed as theoretical explanations of natural phenomena in each case, or whether the explanatory applications were mere afterthoughts. Waterman's investigation, in particular, seems to make it clear that in the New World such explanations are quite secondary and could not have been in the mind of the first composer. This conclusion is reached by a comparative study of the myths for many tribes and is, of course, inferential.

The place of the heavenly bodies in aboriginal myth has been investigated by Ehrenreich,² who defended a theory which states that most of the plots in all tales were but variations of a single theme in which the sun and moon were the leading characters. He took as one of his main factors the submitting of a hero to various kinds of tests.

This topic also has been made the subject of exhaustive inquiry under the title of *The Test Theme*.³ Here, again, the result is negative, and Ehrenreich's theory has been retired to the historical cabinet.

While such problems are of great interest, their solutions are contingent upon facts of distribution. The data so far accumulated enable us to compare the mythologies of the several tribes occupying large areas. When we do so, we find certain tales in common. For example, take the story of the Dancing Birds:—

A trickster induces a number of birds to dance around him, keeping their eyes closed. The penalty for opening the eyes is that they will become red. As the birds dance, the trickster wrings their necks, one by one. One of the dancers grows suspicious, opens his eyes, and gives the alarm. The rest escape.⁴

We find this tale among most Algonkin and Siouan tribes and a few of their neighbors. Approximating this distribution is the "Woman who Went to the Sky," the "Crane Bridge," "Snaring the Sun," and the "Deserted Children." Thus, we have what seems to be a mythological area over which a number of distinct tales have traveled.

For another type tale, we may take the "Rolling Rock," which is found among the Shoshoni tribes of the western highlands, and among some of their immediate neighbors. Quite similarly distributed are the "Burning Cannibal," "Eye Juggler," "Ladder of Arrows," "Skin Shifter," and "Blind Dupe." These have one further peculiarity in that they show a tendency to occur on the North Pacific Coast and in eastern Siberia. Thus we have, in contrast to the preceding, a western mythological area.

Boas⁵ defines another area, comprising the Nahua, some of the Pueblo tribes, the Caddoan tribes of the Mississippi Valley, and perhaps a few others, in which we find myths recounting successive migrations.

Common to the first two areas and extending far over the Old World, is the "Magic Flight," "Vaginal Teeth," and the "Unfaithful Wife." The former tale extends into South America, making it one of the most widely recurring themes.

One striking trait of Mexico, northwestern South America, eastern Brazil, and southeastern United States, is that we find many Old World themes of which the race between the turtle and rabbit is a good example. Boas⁸ has formulated evidence to show that these tales can be traced to early Spanish and Portuguese sources. The latter, and the institution of negro slavery, he considers responsible for the many African themes encountered.

There is also the suggestion of a tendency for each of the great economic areas we have defined (p. 2) to have a distinct group of myths. For example, in the bison area we have the well-known myths of "Blood-clot Boy," "Stone-Boy," and the "Twins."

The peculiarity of the distribution we have just sketched is that we here have a number of tale groups which are distributed independently of each other. If we had found each tale distributed independently of the others, it would have been clear that the directions and extent of diffusion were mere matters of accident; but, when we find tales in groups which are independent, the case is far from clear. So far, the tales of a group show no signs of logical or functional relations, from which we assume that there are historical reasons for this grouping, but as to their identity we are yet ignorant. It should be noted, however, that these areas are as yet but vaguely defined and that Waterman's list of correspondences leaves very marked gaps for the successive myths. More extended data in the future may greatly modify these results.

When we shift our point of view to the place of these tales in aboriginal life, the most acceptable interpretation

is that they are literature; in other words, artistic compositions valued and preserved for the sake of their æsthetic qualities. We have noted that these tales fail to qualify as native theories of origin or as explanatory and test themes, but as literature, some myths rise to the level of sacred narratives and are so regarded by all of the tribe. No very serious attempts have been made to subject large groups of tales to literary analysis, but it is suggested that what is diffused from one tribe to another is a compact definite incident, as the "Magic Flight," the "Eye-Juggler," etc., the whole of which must be taken if at all.⁷ One may, therefore, infer that the causes for the grouping of incidents we have noted arise from the probability that the same historical factors favoring the diffusion of one tale also operated simultaneously with the other. The only antecedent condition, therefore, would be that the group be formed before it was diffused. From such a point of view the phenomenon is intelligible.

That the Inca and the Nahua, at least, had made important advances in literary form is suggested by a few surviving fragments, as noted under Fine Arts (p. 145). The celebrated Inca drama, "Apu Ollantay," has strong claim to being pre-Columbian and certain poetical fragments have come down to us from the Maya and Nahua. That these should have been of a high order is to be expected for, as noted under Fine Arts, we find even among the tribes of the bison area, song rituals of dramatic and poetical merit.⁸ In some cases, conspicuously in some Pueblo and North Pacific Coast ceremonies, well-composed rituals are enacted, staging sacred mythical tales in which the characters are impersonated by the use of masks and other accessories. The purely literary side of these rituals and songs has never been seriously studied.

MYTHOLOGY AND RELIGIOUS CONCEPTIONS

Some of the older writers⁹ have noted the wide distribution of a kind of white-man god, and sought to demonstrate its origin in the phenomena of the sun. This interpretation has not survived criticism, but it serves to call attention to an interesting mythical character. As we have noted, in the god systems of the Inca, Chibcha, Maya, and Nahua, there appears a distinctly human god who lives among men and establishes the present order, but after a time departs. The names under which he is known are, respectively: Viracocha, Bochica, Kukulcan, and Quetzalcoatl. In each case, he is regarded as clothed in white cloth or paint, as having arrived from the East, and as having a beard. When Europeans appeared upon the scene, the local term for this god was applied to them, and entered into the future terminology. We thus have the associated characters of whiteness, bearded, human-like, dawn-like, culture leader, and reformer continuously distributed from Chile to the Rio Grande. But this complex extends even farther afield. In the bison area the Cheyenne Vihuk, the Arapaho Nili-an-can, and the Blackfoot Napiwa possess all of these except the beard, yet each in turn forms the term applied to individuals of our race. In South America the Tsuma of Venezuela seems to have been identical with the whole complex, and the Tupi Zume seems to have been but little different. With the exception of the bison area group, we have practically continuity of distribution, and so far the whole complex has not been found outside of these limits. As Brinton has stated, we can find lesser units of this complex more widely distributed, but his effort to show that these facts of distribution prove that each group devised the conception independently to explain the phenomena of the sun, dawn, etc., is not convincing, for it seems far more probable that the complex was evolved in one locality and thence diffused.

Perhaps one of the most striking traits of this character is that in contrast to most other gods of the New World, he is a person, not an animal or an astronomical monster. To our mind, this one fact is a strong argument for diffusion as against the independent origin theory.

Another widely diffused concept is that of the culture hero trickster.¹⁰ The most notorious of these are the Raven of the North Pacific Coast, the Coyote of the great western highlands, and the Rabbit of the eastern forest region. The peculiarity of this character is that while he gives us the order of the world, he stoops to the most vile pranks that can be conceived and frequently passes as the most guileless of dupes. Several investigators¹¹ have tried to harmonize these, to us, incompatible traits, but it remains simply a fact of observation and may be set down as one of the general characteristics of New World mythology.

Of lesser imaginary beings, the most unique are the thunderbird and the plumed or horned serpent. The former is widely distributed in the United States and Canada; the latter is found from Chile to Lake Superior.

The conception of a deluge destroying the world and its immediate restoration in the present order, is almost universal. It is found in the highlands of Peru and Mexico as well as in the lowlands of both continents.

We have already commented upon the animal-like beings that visit a supplicant in his lonely fast, which is an aspect of the fundamental belief in the animation of nature. Animism,¹² in the broadest sense of the term, was universal and fundamental in the beliefs of the New World. The procedures of the shaman we have discussed are an expression of this faith. Of specific beliefs of this class, the most widespread seem to be those of the bear and the jaguar. From California to the Atlantic, we find the idea that shamans who derive their power from the bear can heal wounds and often restore life. Throughout the Ama-

zon and even into the highlands of Peru and Mexico has spread the idea that the jaguar is the patron saint of all shamans, whose form many of them take on at will.

Three well-localized methods of purifying oneself for sacred offices have been noted. In the whole of the United States and Canada, except among the Eskimo and some of their near neighbors, the sweat house is used. From some notes by Bandelier,¹³ the custom seems to have been followed by the Mexicans also, but they in common with the Maya, Chibcha, and Inca resorted to bleeding, or the offering of drops of blood, for the same purpose. In the Amazon Basin and the West Indies, violent emetics were taken for purging the body. The latter lapped over into the sweat house area along the Gulf, and even in the Pueblo area, while the bleeding method is found in the bison area.

The burning of incense, including the highly original use of tobacco, was almost universal.

The conception of renewing the fire was found in most agricultural tribes, often associated with planting and general seasonal rejuvenation. In modern times, the fire is still kindled with the firedrill or other primitive appliances. In the north, the ceremony appears even among the Pawnee, where, as elsewhere, the fire is kindled by a particular shaman or priest.

In the various discussions of ritualism, we have noted the tendency of the group to follow the whole year through with one ceaseless complex of ceremonies. This is far more conspicuous among the maize-growing tribes. Also closely associated with this cycle is the worship of the sun, moon, winds, rain, morningstar, and other heavenly phenomena.

The concept of the vow was widely diffused in the same area. In the Andean region, one when ill may promise the ceremony of giving gold ornaments to a sacred lake; in the bison area, to have a sun dance or other rituals performed, while between these two outposts it appears in analogous

forms. The distinction we have noted between the shaman and the priest has its bearing here, for it is the latter upon whom the patient calls when a vow is made, and upon him devolves the duty of performing the prescribed rites.

Somewhat analogous to this is the confession of sins. In Mexico, this seems to have been a prominent feature, particularly sexual sins. What may be a reverberation of this extends far up into the United States, where many tribes exact periodic public confessions of sexual irregularities at which all adults must declare themselves in turn. In a wider sense, the concept is found among the Eskimo who have developed many curious taboos respecting every phase of life, the violation of which brings illness, etc., unless promptly confessed. In Peru, special confessions were required.

While there are many other concepts of greater or more restricted distribution, we may close this enumeration with reference to one special group of ideas. A kind of abstract notion of a sacred quality is entertained which develops specific terms. The best known of these is the *wakan*¹⁴ of the Siouan stock, which has its parallels in a number of other languages. In old Peru, the term was *huaca*. The conception seems to be the attribute of possessing or directly associating with extra-human power. In function the terms resemble our *sacred*, *holy*, etc., except that they are applied to anything mysterious.

Another abstract idea is that of the four world quarters, or four directions. This is sometimes expressed by crosses and swastika-like symbols. The number four, whether for this reason or otherwise, is to a large extent the sacred number of the New World. Even in Inca and Nahua organizations, we find it often taken as the numerical unit. In many parts of both continents, smoke is offered to the four directions, and most ceremonial acts are repeated in sets of fours.¹⁵

There appears a tendency for certain tribes to divide into two parts, usually designated as summer and winter groups, whose chiefs lead alternately according to the season. This is quite conspicuous in the Mississippi Valley, whence it extends into Mexico, and has its counterparts in Peru. The mere social cleavage into two parts, or moieties, we have considered elsewhere (p. 166), but, like certain other social traits, this, also, has its ceremonial associations which greatly expand the complex. These mythical and religious concepts offer a fine field for further study. We have here but mentioned a few of the best known, but for no one of them can so much as a complete distribution be stated. The whole subject of mythical thought, philosophical, and religious conceptions as a New World contribution to man's history is still before us.

UNITY OF NEW WORLD CULTURE

Our initial task, a general review of the most important traits of culture for the various native social units of the New World is now finished. The one striking suggestion is that notwithstanding the great diversity we have found, there are, on every hand, the unmistakable signs of unity. The higher cultures of Mexico and Peru are, after all, merely the great centers where the fundamental elements in New World culture were full blown. Thus, we found that agriculture, metal work, ceramics, architecture, and sculpture, all centered there. In addition, there were a number of specific instances of miscellaneous traits that radiated from these centers. Confronted as we are by the undeniable evidences for the local diffusion of culture traits in all parts of both continents, it would be difficult to conceive of the existence of these virile centers in entire isolation.

But passing on to less material traits, we find even stronger claims to unity of culture. Thus, society itself was

almost everywhere composed of the same kind of units, whose conceptions of property and political rights were the same. Ritualism, priestcraft, and shamanism, mythological conceptions, and religious attitudes also show many specific cases of uniformity. Hence, we are fully justified in regarding the New World as one distinct culture province. These considerations, however, lead us into problems best deferred to the end of this work.

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| 1. Waterman, 1914. I. | 8. Fletcher, 1904. I. |
| 2. Ehrenreich, 1905. I. | 9. Brinton, 1882. I. |
| 3. Lowie, 1908. I. | 10. Boas, 1914. I. |
| 4. Waterman, 1914. I, p. 44. | 11. Boas, 1914. I. |
| 5. Boas, 1914. I. | 12. Tylor, 1889. I. |
| 6. Boas, 1914. I. | 13. Bandelier, 1884. I. |
| 7. Boas in Teit, 1898. I; Radin,
1915. I; Alexander, 1916. I. | 14. Jones, W., 1905. I. |
| | 15. Alexander, 1920. I. |

CHAPTER XIV

THE CLASSIFICATION OF SOCIAL GROUPS ACCORDING TO THEIR CULTURES

WE have now passed in review the traits that are usually taken as constituting culture. The anthropological conception of the term is that it is the trait-complex manifested by a separate social unit of mankind. Some anthropologists take the position that the only correct view of the data of our subject is that which regards the social unit solely and that all such discussions as we have so far made are wrong in principle, because each trait has a peculiar relation to the complex practised by the group. This belief seems to arise in a kind of functional view in which the only problem of importance is to describe the manner in which a given social unit works out its culture. But it is now clear that no social group in the New World can be reckoned guilty of entire cultural independence, and that certain traits have spread over very large parts of both continents, whence the problem of a single social unit becomes of relatively little importance, because until we take in the whole sweep of the phenomenon no true account of it can be given.

As we have stated before this, the number of social groups in the New World is so large that no one can hope to hold in mind more than a small portion of them. Hence, even if we accept the extreme view that our subject should be limited to observing the separate functioning of these social units, some mode of classifying these many groups would still be imperative; for only in this way could the number of groups be reduced to the level of human comprehension. In the preceding chapters we saw that the na-

tives of the New World could be grouped according to single culture traits, giving us food areas, textile areas, ceramic areas, etc. If, however, we take all traits into simultaneous consideration and shift our point of view to the social, or tribal units, we are able to form fairly definite groups. This will give us culture areas, or a classification of social groups according to their culture traits. The historical development of our subject gives us two kinds of culture data and so commits us to two rather distinct classifications—historic culture areas and archæological areas, respectively.

THE HISTORIC TRIBES

In the initial chapter, we defined nine economic areas, giving us a kind of culture classification which the subsequent discussions proved to have some general validity for culture as a whole. Yet, we have from time to time brought to notice differentiations in the trait-complexes for different parts of these economic areas, suggesting that a close examination of a large series of traits will result in a somewhat different grouping. A perusal of the literature of our subject shows it to be customary to divide the two continents into fifteen regions or areas. If desired, most of these can be subdivided, but it will best serve our purpose to deal with a smaller number. Each area designated has natural features peculiar to it and the tribes living in one of these areas have many culture traits in common.

NORTH AMERICAN CULTURE AREAS

I. *The Plains Area.* For example, in the great western plains of the United States, we have thirty-one tribal groups, of which eleven may be considered as manifesting the typical culture of the area: *viz.*, the Assiniboin, Arapaho, Blackfoot, Cheyenne, Comanche, Crow, Gros Ventre, Kiowa, Kiowa-Apache, Sarsi, and Teton-Dakota. The chief traits of this culture are the dependence upon the buf-



Fig. 58. Culture Areas

falo or bison, and the very limited use of roots and berries; absence of fishing; lack of agriculture; the tipi as a movable dwelling; transportation by land only, with the dog and the travois (in historic times with the horse); want of basketry and pottery; no true weaving; clothing of buffalo and deerskins; a special bead technique; high development of work in skins; special rawhide work (parfleche, cylindrical bag, etc.); use of a circular shield; weak development of work in wood, stone, and bone. Their art is strongly geometric, but as a whole, not symbolic; social organization tends to the simple band; a camp circle organization; a series of societies for men; sun dance ceremony; sweat house observances, scalp dances, etc.

In historic times, these tribes ranged from north to south in the heart of the area. (Fig. 59.) On the eastern border were some fourteen tribes having most of the positive traits enumerated above and, in addition, some of the negative ones, such as a limited use of pottery and basketry; some spinning and weaving of bags; rather extensive agriculture; alternating the tipi with larger and more permanent houses covered with grass, bark, or earth; some attempts at water transportation; tending not to observe the sun dance, but to substitute maize festivals, shamanistic performances, and the *midéwin* of the Great Lakes tribes. These tribes are: the Arikara, Hidatsa, Iowa, Kansa, Mandan, Missouri, Omaha, Osage, Oto, Pawnee, Ponca, Santee-Dakota, Yankton-Dakota, and the Wichita.

On the western border were other tribes (the Wind River Shoshoni, Uintah and Uncompahgre Ute) lacking pottery, but producing a rather high type of basketry; depending far less on the buffalo but more on deer and small game; making large use of wild grass seeds, or grain; alternating tipis with brush and mat-covered shelters; and not as a whole inclined to the sun dance and the other ceremonial practices of their eastern neighbors.

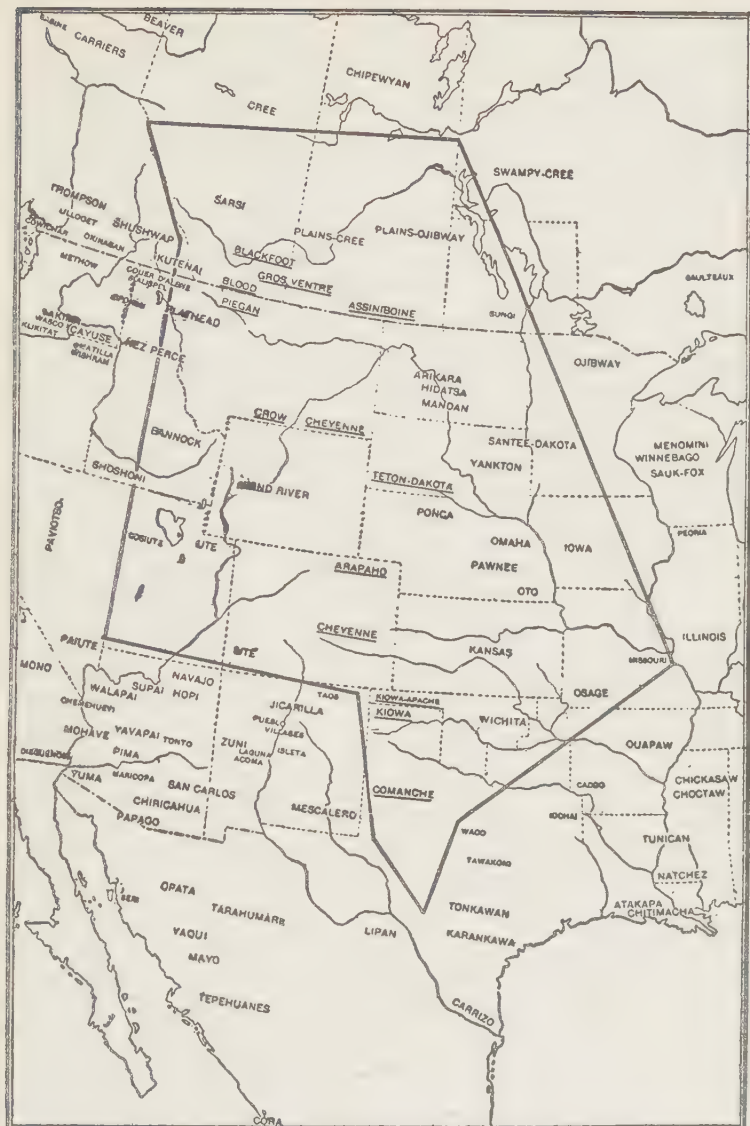


Fig. 59. The Plains Indian Culture Area. The most typical tribes are underlined

Also, on the northeastern border are the Plains-Ojibway and Plains-Cree who have many traits of the forest-hunting tribes as well as most of those found in the Plains. Possibly a few of the little-known bands of Canadian Assiniboin should be included in this group in distinction from the Assiniboin proper.

These variations from the type are, as we shall see, typical traits of the adjoining areas, the possible exception being the earth-lodges of the Mandan, Pawnee, etc. On the other hand, the tribes of the area as a whole have in common practically all the traits of the typical group. For example, the Mandan made some use of tipis, hunted buffalo, used the travois, worked in skins and rawhide, and armed and clothed themselves like the typical Plains tribes; but also added other traits, pottery, basketry, agriculture, and earth-lodges. Thus we see that while in this area there are marked culture differences, the traits constituting these differences tend to be typical of other areas; hence, we are quite justified in taking the cultures of the central group as the type for the area as a whole.

2. *Plateau Area.* The Plateau area joins the Plains on the west. It is far less uniform in its topography, the south being a veritable desert while the north is moist and fertile. To add to the difficulties in systematically characterizing this culture, arising from lack of geographical unity, is the want of definite information for many important tribes. Our readily available sources are Teit's Thompson, Shuswap, and Lillooet;¹ Spinden's Nez Percé;² and Lowie's Northern Shoshone;³ but there is also an excellent summary of the miscellaneous historical information by Lewis.⁴ In a general way, these intense tribal studies give us the cultural nuclei of as many groups, the Interior Salish, the Shahaptian, and the Shoshoni. Of these, the Salish seem the typical group, because both the Nez Percé and the Shoshoni show marked Plains traits. It is also the largest, having

sixteen or more dialectic divisions and considerable territorial extent. Of these the Thompson, Shuswap, Okanagan (Colville, Nespelim, Sanpoil, Senijixtia), and Lillooet seem to be the most typical. The material traits may be summarized as: extensive use of salmon, deer, roots (especially camas), and berries; the use of a handled digging-stick; cooking with hot stones in holes and baskets; the pulverization of dried salmon and roots for storage; winter houses, semi-subterranean, a circular pit with a conical roof and smoke hole entrance; summer houses; movable or transient, mat or rush-covered tents and the lean-to, double and single; the dog sometimes used as a pack animal; water transportation weakly developed, crude dug-outs and bark canoes being used; pottery not known; basketry highly developed, coil, rectangular shapes, imbricated technique; twine weaving in flexible bags and mats; some simple weaving of bark fiber for clothing; clothing for the entire body usually of deerskins; skin caps for the men, and in some cases basket caps for women; blankets of woven rabbitskin; the sinew-backed bow prevailed; clubs, lances, and knives, and rod and slat armor (Fig. 52) were used in war, also heavy leather shirts; fish spears, hooks, traps, and bag nets were used; dressing of deerskins highly developed, but other skinwork weak, upright stretching frames and straight long-handled scrapers; while wood work was more advanced than among the Plains tribes it was insignificant as compared to the North Pacific Coast area (4); stone work was confined to the making of tools and points, battering and flaking, some jadeite tools; work in bone, metal, and feathers very weak.

Of the non-material traits the most distinctive are: decorative art simple and inconspicuous, rather inclining towards the Plains type on the one hand and that of the North Pacific Coast tribes on the other; lack of definite tribal organization and band distinctions; a weak but still definite social

distinction based upon personal wealth, with at least a modern use of the "potlatch" ceremony; hence, there are no striking general ceremonies or ritualistic societies as in the preceding area; puberty ceremonies rather prominent and related to the general belief in personal guardians; mythology largely a record of the "trickster type."

The Shahaptian group includes tribes of the Waiilatpuan stock. The underground house seems to be wanting here, but the Nez Percé used a form of it for a young men's lodge. However, the permanent house seems to be a form of the double lean-to of the north. In other respects the differences are almost wholly due to the intrusion of traits from the Plains.

The Northern Shoshonean tribes were even farther removed toward Plains culture, though they used a dome-shaped brush shelter before the tipi became general; thus, they used canoes not at all, carried the Plains shield; deer being scarce in their country they made more use of the buffalo than the Nez Percé, depended more upon small game and especially made extensive use of wild grass seeds, though as everywhere in the area, roots and salmon formed an important food; in addition to the universal sagebrush bark weaving they made rabbitskin blankets; their basketry was coil and twine, but the shapes were round; they had some steatite jars and possibly pottery, but usually cooked in baskets; their clothing was quite Plains-like and work in rawhide was well developed; in historic times they were great horse Indians, but seem not to have used the travois either for dogs or horses. A number of ceremonial dances also remind one of the Plains. The remaining Shoshoni of western Utah and Nevada were in a more arid region and so out of both the salmon and the buffalo country, but otherwise their fundamental culture was much the same, though far less modified by Plains traits. The Wind River division, the Uintah or Uncompahgre Ute, it should be noted,

belong more to the Plains area than here, and have been so classed. In the extreme western part of Nevada we have the Washo, a small tribe and linguistic stock who, in common with some of the little-known Shoshonean Mono-Paviotso groups, seem to have been influenced by California culture, since we find here a form of *balsa*, or the tule reed raft-like boat of California. Among other variants, the occasional use of insects as food may be noted. On the north of our area are the Athapascan Chilcotin, whose culture was quite like that of the Salish, and to the northeast the Kutenai, with some individualities and some inclinations towards the Plains, especially in social and ceremonial traits.

In general, it appears that in choice of foods, textile arts, quantity of clothing, forms of utensils, fishing appliances, methods of cooking and preparing foods, weakly developed decorative art, meager social organization, distinctions by property, religious and mythological conceptions, there was great uniformity throughout the entire area; while in houses, transportation, weapons, cut and style of clothing, specific ceremonies and war customs, the groups designated above presented some important differences. As in the Plains area, we find certain border tribes strongly influenced by the cultures of the adjoining areas.

3. *California Area.* In California we have a marginal or coast area, which Kroeber⁵ divides into four sub-culture areas. However, by far the most extensive is the central group to which belongs the typical culture. Its main characteristics are: acorns, the chief vegetable food, supplemented by wild seeds, roots and berries are scarcely used; acorns made into bread by a roundabout process; hunting mostly for small game and fishing where possible; houses of many forms, but all simple shelters of brush or tule, or more substantial conical lean-to structures of poles; the dog was not used for packing, and there were no canoes, but

used rafts of tule for ferrying; no pottery, but high development of basketry, both coil and twine; bags and mats very scanty; cloth or other weaving of twisted elements not known; clothing was simple, and scanty, feet generally bare; the bow, the only weapon, usually sinew-backed; work in skins very weak; work in wood, bone, etc., weak; metals not at all; stone work not advanced; no picture writing; designs only upon baskets and not symbolic; social organizations simple without gens or clan forms; political solidarity almost lacking; no formal social ranking, but some tendency to recognize property distinctions; ritualism, fetishism, and religious symbolism almost lacking; well developed puberty ceremonies for girls and a kind of secret initiation for men; a mourning ceremony in which gifts are burned; a tendency to maintain a series of dances in a fixed order; a semi-underground or earth-covered house for ceremonies, a sweat house and the sleeping place of adult males; shamanism conspicuous, but absence of fasting and other inducing methods; regalia not elaborate, feather head bands most general; creation and culture origin myths prevail, a dignified creator, but in addition coyote tales.

As with the preceding areas, we must again consider intermediate groups. In the south, the characteristic linguistic individuality vanishes to make room for large groups of Yuman and Shoshonean tribes; here we find some pottery, sandals, wooden war clubs, and even curved rabbit sticks, all intrusive; but, in ceremonies and other non-material traits, these tribes conform to the California type we have outlined. The extinct Santa Barbara were at least variants, living upon sea food, having some wood work, making plank canoes, and excellent workers of stone, bone, and shell. In northern California are again the Karok, Yurok, Wishosk, Shasta, and Hupa and other Athapaskan tribes; here sea food on the coast and salmon in the interior rival acorns and other foods; dug-out canoes; rectangular gabled

houses of planks with circular doors; basketry almost exclusively twined; elkhorn and wooden trinket boxes; elkhorn spoons; stone work superior to that of central California; the occasional use of rod, slat, and elkskin armor and also basket hats of the northern type. These all suggest the culture farther north (Area 4), as do the appearance of carving and the more elaborate decorative art. Also, social organization becomes more definite, with clear-cut property distinctions, mourning ceremonies, and the secret initiations are wanting; and the use of stuffed albino deerskins in certain ceremonies is distinctive. Even the mythology is said to have leanings toward that of the north and east.

4. *North Pacific Coast Area.* Ranging northward from California to the Alaskan peninsula we have an ethnic coast belt, known as the North Pacific Coast area.⁶ This culture is rather complex and presents highly individualized tribal variations; but can be consistently treated under three subdivisions: (*a*) the northern group, Tlingit, Haida and Tsimshian; (*b*) the central group, the Kwakiutl tribes and the Bellacoola; and (*c*) the southern group, the Coast Salish, the Nootka, the Chinook, Kalapooian, Waiilatpuan, Chimakuan, and some Athapascan tribes. The first of these seem to be the type and are characterized by: the great dependence upon sea food, some hunting upon the mainland, large use of berries; dried fish, clams and berries are the staple food; cooking with hot stones in boxes and baskets; large rectangular gabled houses of upright cedar planks with carved posts and totem poles; travel chiefly by water in large, sea-going dug-out canoes, some of which had sails; no pottery nor stone vessels, except mortars; baskets in checker, those in twine reaching a high state of excellence among the Tlingit; coil basketry not made; mats of cedar bark and soft bags in abundance; the Chilkat, a Tlingit tribe, specialized in the weaving of a blanket of goat hair; there was no true loom, the warp hanging from a bar, and

weaving with the fingers, downward, clothing rather scanty, chiefly of skin, a wide basket hat (only one of the kind on the continent and apparently for rain protection); feet usually bare, but skin moccasins and leggings were occasionally made; for weapons the bow, club, and a peculiar dagger, no lances; slat, rod and skin armor; wooden helmets, no shields; practically no chipped stone tools, but nephrite or green stone used; wood work highly developed, splitting and dressing of planks, peculiar bending for boxes, joining by securing with concealed stitches, high development of carving technique; work in copper may have been aboriginal, but, if so, very weakly developed; decorative art is conspicuous, tending to realism in carved totem poles, house posts, etc.; some geometric art on baskets, but woven blankets tend to be realistic; each family expresses its mythical origin in a carved or painted crest; the tribe of two exogamic divisions with maternal descent; society organized as chiefs, nobles, common people, and slaves; a kind of barter system expressed in the potlatch ceremony in which the leading units of value are blankets and certain conventional copper plates; a complex ritualistic system by which individuals are initiated into the protection of their family guardian spirits, those so associated with the same spirit forming a kind of society; mythology characterized by the Raven legends.

The central group differs in a few minor points: use a hand stone hammer instead of a hafted one; practically no use of skin clothing, but twisted and loosely woven bark or wool; no coil or twined basketry, all checker work; has a tendency toward paternal descent for its exogamic groups; the crest system less in evidence, but the initiation groups very strong, particularly the cannibal cult, and far less associated with the clans.

Among the southern group appears a strong tendency to use stone arrow-heads in contrast to the north; a peculiar

flat club, vaguely similar to the New Zealand type, the occasional use of the Plains warclub; greater use of edible roots (camas, etc.) and berries, some use of acorns, as in California; the handled digging-stick; roasting in holes (especially camas), and the pounding of dried salmon; a temporary summer house of bark or rushes; twine basketry prevailed; the sewed rush mat; costume like the central group. The art, social, and ceremonial traits of the north all thin out as we move southward.

5. *Eskimo Area*. The chief résumés of Eskimo culture have been made by Boas,⁷ who divides them into nine or more groups, as follows: the Greenland Eskimo; the Eskimo of southern Baffin Land and Labrador; the Eskimo of Melville Peninsula, North Devon, north Baffin Land, and the northwest shore of Hudson Bay; the Sagdlirmiut of Southampton Island; the Eskimo of Boothia Felix, King William Land, and the neighboring mainland; the Eskimo of Victoria Island and Coronation Gulf; the Eskimo between Cape Bathurst and Herschel Island, including the mouth of the Mackenzie River; the Alaskan Eskimo; and the Yuit of Siberia. When we consider the fact that the Eskimo are confined to the coast line, and stretch from the Aleutian Islands to eastern Greenland, we should expect lack of contact in many parts of this long chain to give rise to many differences. While many differences do exist, the similarities are striking, equal, if not superior, in uniformity to those of any other culture area. However, our knowledge of these people is far from satisfactory, making even this brief survey quite provisional.

The mere fact that they live by the sea, and chiefly upon sea food, will not of itself differentiate them from the tribes of the North Pacific Coast; but the habit of camping in winter upon sea ice and living upon seal, and in the summer, upon land animals, will serve us. Among other traits the kayak and "woman's boat," the lamp, the harpoon, the

float, woman's knife, bowdrill, snow goggles, the trussed-bow, and dog traction, with the sled, are almost universal and, taken in their entirety, rather sharply differentiate Eskimo culture from the remainder of the continent. The type of winter shelter varies considerably, but the skin tent is quite universal in summer, and the snowhouse, as a more or less permanent winter dwelling prevails east of Point Barrow. Intrusive traits are also present; basketry of coil and twine is common in Alaska; pottery also extended eastward to Cape Parry; the Asiatic pipe occurs in Alaska and the Indian pipe on the west side of Hudson Bay; likewise, some costumes beaded in general Indian style have been noted west of Hudson Bay. All Eskimo are rather ingenious workers with tools, in this respect strikingly like the tribes of the North Pacific Coast. In Alaska, where wood is available, the Eskimo carve masks, small boxes, and bowls with great cleverness.

These variants all tend to disappear between Point Barrow and Hudson Bay, and it may be noted that they are at the same time traits that occur in Asia, the North Pacific Coast, or the Mackenzie Area (6). Hence, we seem justified in looking toward the east for the typical material culture. From our limited knowledge it appears that the great central group from Banks Island on the west to Smith Sound in North Greenland is the home of the purest traits; here are snowhouses; dogs harnessed with single traces; rectangular stone kettles; and the almost entire absence of wooden utensils; a simple order of social and political life in which the unit is the family; a political chief, in the sense known in Indian culture, not recognized; shamanism rather prominent and comparable to that found in Siberia; great elaboration of taboos and a corresponding requirement of confession; almost no ritualistic ceremonies, but at least one yearly gathering in which masked men impersonate gods; temporary exchange of wives at the preceding; my-

thology simple and centering around the goddess of the sea animals. Between Greenland and Labrador the differences are small, and apparently due more to modern European influences than to prehistoric causes. However, our information respecting the Labrador Eskimo is not very satisfactory. The archæology of the Eskimo does not pertain to this chapter, but the work of Jochelson,⁸ Mathiassen,⁹ and Birket-Smith¹⁰ suggests even greater culture uniformity for the prehistoric Eskimo than has been observed among the living. Yet, later studies in Alaska indicate that this uniformity belongs to the immediate prehistoric Eskimo.¹¹

6. *Mackenzie Area.* Skirting the Eskimo area from east to west is a great interior belt of semi-arctic lands, including the greater part of the interior of Canada. Hudson Bay almost cuts it into two parts, the western or larger part occupied by the Déné tribes, the eastern by Algonkins, the Saulteaux, Cree, Montagnais, and Naskapi. The fauna, flora, and climate are quite uniform for corresponding latitudes and are reflected to some extent in material culture, so that we should be justified in considering it one great area, if the less material traits did not show definite distinctions. As noted in our first chapter, the chief cultural bond through the region is the use of the caribou. The caribou ranged from Maine to Alaska and throughout all this area furnished the greater part of the clothing and tents and a considerable portion of the food. They could not be taken easily in summer, but in winter were killed in drives, on the ice, or after a thaw, in the water. They were also snared. All of these methods were known from Alaska to Newfoundland. Between the Mackenzie and Hudson Bay ranged the barren ground variety, whose habits were somewhat like those of the buffalo on the plains, and the tribes in reach of their range lived upon them almost as completely as did the Indians of the Plains upon the buffalo.¹² Along with these widely distributed caribou traits go the great use of spruce

and birchbark for canoes and vessels, babiche and bark fiber, toboggans and skin or bark-covered tents, and the use of snares and nets. Notwithstanding these similarities, the other aspects of culture for eastern Canada appear intermediate to the Eastern Woodland area (7) of the United States. Hence, the great Déné country of the Canadian Northwest is usually considered as a distinct culture area, taking its name from its largest river.

Our knowledge of the area is so fragmentary that the tribal names have not been standardized; but Jenness and Osgood¹³ have proposed tentative lists. The tribal political systems are so loose that the autonomous groups may exceed one hundred.

For the most part, these tribes camped along the rivers and lakes, using canoes in summer and traveling on the ice in winter. We find it convenient to discuss them under three divisions: a, the southwestern: Carrier (Babine), Kaska (Nahani), and Sekani; b, eastern: Yellow Knife, Dog Rib, Chipewyan, Beaver, Slave, Hare, Mountain, and Bear Lake; c, northwestern: Tutchone, and all the tribes in Alaska.

Of these three groups, the southwestern is the largest and occupies the most favorable habitat. From the writings of Father Morice, a fairly satisfactory statement of their cultures can be made, as follows: All the tribes are hunters of large and small game, caribou are often driven into enclosures, small game taken in snares and traps; a few of the tribes on the headwaters of the Pacific drainage take salmon, but other kinds of fish are largely used; large use of berries is made, they are mashed and dried by a special process; edible roots and other vegetable foods are used to some extent; utensils are of wood and bark; no pottery; bark vessels for boiling with and without use of stones; travel in summer largely by canoe; in winter by snowshoe; dog sleds used to some extent, but chiefly since trade days, the toboggan form prevailing; clothing of skins; mittens

and caps; no weaving except rabbitskin garments, but fine network in snowshoes, bags, and fish nets, materials of bark fiber, sinew, and babiche; there is also a special form of woven quill work with geometric designs; the typical habitation seems to be the double lean-to, though many intrusive forms occur; fish-hooks and spears; limited use of copper; work in stone weak; social organization simple, but yet showing forms of maternal clans, property distinctions, etc., reminding one of the North Pacific area; the hospitable exchange of wives; shamanism very prominent, but no good evidence of ritualism.

Unfortunately, the data available on the other groups are less definite, so that we cannot decisively classify the tribes. From Hearne,¹⁴ Mackenzie,¹⁵ and others it appears that the following traits prevailed over the entire Déné area: the twisting of bark fiber without spindle and its general use, reminding one of sennit; snares and nets for all kinds of game; the use of spruce and birchbark for vessels and canoes; basketry of split spruce root (*watap*) for cooking with hot stones, noted by early observers; the toboggan; in summer the use of babiche; the short-handled stone adze; iron pyrites instead of the firedrill and fungus for touchwood; the use of the cache; and, above all, dependence upon the caribou; a tendency toward the simplest kind of social grouping; prominence of shamanism and weakness of ritualism. These seem to be the most characteristic traits of the Déné as a whole, and, while neither numerous nor complex, are still quite distinctive.

Until recently little was known as to the culture of the northwestern group of Déné, but now the investigations of Osgood¹⁶ make it possible to characterize them. This investigator concludes that the crests of the Rocky Mountains may be taken as the boundary between the two main culture divisions of the Déné.

The tribes west of the crest have been influenced by the

Eskimo, on the one hand, and the Tlingit, Haida, etc., on the other. To the former may be attributed the kayak, skin boat, and certain fishing implements; to the latter, higher and lower social classes based upon wealth, exogamous clans, the potlatch, and the use of armor. There is an environmental factor in that fishing for salmon which run in the streams west of the Rockies is accompanied by ritualistic ceremonies also characteristic of the south. In general, the culture of this western group seems richer and more complex than in the east.

The lean-to has been cited as an outstanding characteristic of the whole Déné area, but while known throughout, it is not the sole type of dwelling. Thus, in the extreme east, tipis are common; in the northwest, houses of upright planks or logs are frequently seen; practically everywhere the lean-to and some kind of tipi are in association. The preceding review should be taken as tentative.

7. *Eastern Woodland Area.* We come now to the so-called Eastern Woodland area, the characterization of which is difficult. As just noted, its northern border extends to the Arctic and all the territory between the Eskimo above, and Lakes Superior and Huron below, and eastward to the St. Lawrence, is the home of a culture whose material traits are comparable to those of the preceding area. In brief, these traits are the taking of caribou in pens; the snaring of game; the considerable use of small game and fish; the use of berry food; the weaving of rabbitskins; the birch canoe; the toboggan; the conical skin or bark-covered shelter; the absence of basketry and pottery; use of bark and wooden utensils. The tribes most distinctly of this culture are the Ojibway north of the Lakes, including the Saulteaux, the Wood Cree, the Montagnais, and the Naskapi.

Taking the above as the northern group, we find the main body falls into three large divisions:

1. The Iroquoian tribes (Huron, Wyandot, Erie, Susque-

hanna, and the Five Nations) extending from north to south and thus dividing the Algonkin tribes.

2. The Central Algonkin, west of the Iroquois: Some Ojibway, the Ottawa, Menomini, Sauk and Fox, Potawatomi, Peoria, Illinois, Kickapoo, Miami, Piankashaw, Shawnee, also the Siouan Winnebago.

3. The Eastern Algonkin: the Abnaki group, and the Micmac (not to be distinguished from the northern border group noted above save by their feeble cultivation of maize), the New England tribes, and the Delaware.

While the Iroquoian tribes seem to have been predominant, their culture, as a whole, suggests a southern origin, thus disqualifying them for places in the type group. The Eastern tribes are not well known, many of them being extinct, but they also seem to have been strongly influenced by the Iroquois and by southern culture. We must, therefore, turn to the Central group for the type. Even here the data are far from adequate; for the Peoria, Illinois, Miami, and Piankashaw have almost faded away. Little is known of the Kickapoo and Ottawa, and no serious studies of the Shawnee are available. The latter, however, seem to belong with the transitional tribes of the Eastern group, if not actually to the Southeastern area. Our discussion, therefore, must be based on the Ojibway, Menomini, Sauk and Fox, and Winnebago.¹⁷

Enumerating their most characteristic traits, we have: maize, squashes, and beans cultivated (though weakly by the Ojibway); wild rice where available was a great staple; maple sugar was manufactured; deer, bear, and even buffalo were hunted, also wild fowl; fishing was fairly developed, especially sturgeon fishing on the lakes; pottery was weakly developed but formerly used for cooking vessels; vessels of wood and bark were common; some splint basketry; two types of shelter prevailed, a dome-shaped bark or mat-covered lodge for winter, a rectangular bark house

for summer, though the Ojibway tended to use the conical type of the northern border group instead of the latter; canoes of bark and dug-outs were used, where possible; the toboggan was occasionally used, snowshoes were common; dog traction rare; weaving of bark fiber downward with the fingers; soft bags; pack lines; and fish nets; clothing of skins, soft-soled moccasins with drooping flaps, leggings, breechcloth, and sleeved shirts for men; for women, a skirt and jacket, though a one-piece dress was known; skin robes, some woven of rabbitskin; no armor, bows of plain wood, no lances, both the ball-ended and gun-shaped wooden club, in trade days the tomahawk; deer were often driven into the water and killed from canoes (the use of the jack-light should be noted); fish taken with hooks, spears, and nets, small game trapped and snared; work in skins confined to clothing; bags usually woven, other receptacles made of birchbark; mats of reed and cedarbark common; work in wood, stone, and bone weakly developed; probably considerable use of copper in prehistoric times; feather-work rare; a gens organization, no social classes or formal property distinctions; decorative art tending toward non-geometric forms; a secret initiation ceremony known as the Midéwiwin; a well-developed scalp dance; fixed ritualistic procedures in conducting a war party; ceremonial bundles for war, hunting, and also for social groups; mythology complex, dealing in part with the deeds of Manitou beings; elaboration of song rituals for many phases of routine life; specialization in root and herb formulas for treating the sick, but some shamanistic traits, as the juggler's lodge.

When we come to the eastern group we find agriculture more intensive (except in the extreme north) and pottery more highly developed. Woven feather cloaks seem to have been common, a southern trait. Work in stone also seems a little more complex; a special development of steatite

work. More use was made of edible roots. The decorative art was less geometric and ritualism weaker than in the typical group.

The Iroquoian tribes¹⁸ were even more intensive agriculturists and potters; they made some use of the blowgun; developed cornhusk weaving; carved elaborate masks from wood; lived in rectangular long houses of peculiar pattern; built fortifications; and were superior in bone work; maintained a series of masked secret societies, a corn harvest festival, and, above all, a highly developed political organization or "League of the Six Nations," which made systematic conquests.

8. *Southeastern Area.* The center of development in this area was the lower Mississippi for which the Natchez may be cited as the type. The Powhatan group, and perhaps the Shawnee, are marginal. These eliminated, we have the Muskogean and Iroquoian tribes (Cherokee and Tuscarora), as the chief groups, also the Yuchi, Eastern Siouan, Tunican, and Quapaw. The Chitimacha and Attacapa differ from the others chiefly in the greater use of aquatic foods. The Caddoan tribes had a different type of shelter and were otherwise slightly deflected toward the Plains culture. We have little data for the Tonkawa, Karankawa, and Carrizo, but they seem not to have been agriculturists and some of them seem to have lived in tipis like the Lipan, being almost true buffalo Indians. These thus stand as intermediate and may belong with the Plains or the Southwest area. The Biloxi of the east, the extinct Timuqua, and the Florida Seminole are also variants from the type. They were far less dependent upon agriculture and made considerable use of aquatic food. The Timuqua lived in circular houses and, as did the Seminole,¹⁹ used bread made of coonti roots (*Zamia pumila*), the method of preparation suggesting West Indian influence. The eating of human flesh is also set down as a trait of several Gulf

Coast tribes. Our typical culture then may be found at its best among the Muskogean, Yuchi, and Cherokee.²⁰

The following are the most distinctive traits: great use of vegetable food and intensive agriculture; raised maize, cane (a kind of millet), pumpkins, melons, tobacco, and after contact with Europeans, quickly took up peaches, figs, etc.; large use of wild vegetables also; dogs eaten, the only domestic animal, but chickens, hogs, horses, and even cattle were adopted quickly; deer, bear and bison in the west were the large game, for deer the stalking and surround methods were used; turkeys and small game were hunted and fish taken when convenient (fish poisons were in use, suggesting South America); of manufactured foods—bears' oil, hickory-nut oil, persimmon bread, and hominy are noteworthy; houses were generally rectangular with curved roofs, covered with thatch or bark, also often provided with plaster walls reinforced with wickerwork; towns were well fortified with palisades; dug-out canoes; costume was moderate, chiefly of deerskins, robes of bison, etc., shirt-like garments for men, skirts and toga-like upper garments for women, boot-like moccasins for winter; some woven fabrics of bark fiber, and fine netted feather cloaks; some buffalo-hair weaving in the west, weaving downward with the fingers; fine mats of cane and some cornhusk work; baskets of cane and splints, the double or nested basket and the basket meal sieve are special forms; knives of cane, darts of cane and bone; blowguns in general use; good potters, coil process, paddle decorations;²¹ skin dressing by slightly different method from elsewhere (macerated in mortars) and straight scrapers of hafted stone; work in stone of a high order, but no true sculpture; little metal work; ceremonial houses, or temples, for sun worship in which were perpetual fires; these, and other important buildings set upon mounds; elaborate planting and harvest rituals, especially an important ceremony known as the "busk"; the

kindling of new fire and the use of the "black drink"; a clan system with society composed of chiefs and four grades of subjects; chiefs regarded as under the sacred influence of the Sun God, reminding us of Peru; political systems developed, with strong confederacies; strong development of the calumet procedure; shamanism prominent.

9. *Southwestern Area.* In the Southwestern area we have a small portion of the United States (New Mexico and Arizona) and an indefinite portion of Mexico. For convenience, we shall ignore all tribes south of the international boundary. Within these limits, we have what appear to be two types of culture: the Pueblos and the nomadic tribes, but from our point of view this distinction seems not wholly justifiable, since the differences are chiefly those of architecture and social grouping and not unlike those already noted in the Eastern Woodland area. On account of its highly developed state and its prehistoric antecedents, the Pueblo culture appears as the type.²² The cultures of the different villages are far from uniform, but, ignoring minor variations, fall into three geographical groups: the Hopi (Walpi, Sichumovi, Hano [Tewa], Shipaulovi, Mishongnovi, Shungopovi, and Oraibi); Zuñi (Zuñi proper, Pescado, Nutria, and Ojo Caliente); and the Rio Grande (Taos, Picuris, San Juan, Santa Clara, San Ildefonso, Tesuque, Pojoaque, Nambé, Jemez, Pecos, Sandia, Isleta—all of Tanoan stock; San Felipe, Cochiti, Santo Domingo, Santa Ana, Sia, Laguna, and Acoma—Keresan stock). The culture of the whole may be characterized first by certain traits not yet found in our survey of the continent; *viz.*, the main dependence upon maize and other cultivated foods (men did the cultivating and weaving of cloth instead of women, as above); the use of a grinding stone, or metate, instead of a mortar; the art of masonry; loom or upward weaving; cultivated cotton as textile material; pottery decorated in color; a unique type of building; and the domes-

tication of the turkey. These certainly serve to sharply differentiate this culture.

While the main dependence was placed on vegetable food there was some hunting; the eastern villages hunted buffalo and deer, especially Taos. The most unique hunting weapon is the flat, curved rabbit stick, in fact, a kind of boomerang. Drives of rabbits and antelope were practised. The principal wild vegetable food was the piñon nut. Of manufactured foods, *piki* bread is the most unique. In former times, the villages often traded for meat with the more nomadic tribes. Taos, Pecos and a few of the frontier villages used buffalo robes and often dressed in deerskins, but woven robes were usual. Men wore aprons and a robe when needed. In addition to cloth robes, some were woven of rabbitskin and some netted with turkey feathers. Women wore a woven garment reaching from the shoulder to the knees, fastened over the right shoulder only. For the feet, hard-soled moccasins, those for women having long strips of deerskin wound around the leg. Pottery was highly developed and served other uses than the practical. Basketry was known, but not so highly developed as among the non-Pueblo tribes. The dog was kept, but not used in transportation, and there were no boats. The mechanical arts were not highly developed; their stone work and work in wood, while of an advanced type, does not excel that of some other areas; some work in turquoise, but nothing in metal. Art flourished chiefly as pottery decoration and in ceremonial painting; the latter tended to be symbolic but usually bordered upon the realistic; a complex social grouping in which relationship is usually maternal, but the unity of the system is apparent in that the same group names can be traced throughout the different villages; ²³ each village independent with an elective governor and a war chief, the final sanction, however, resting with a supreme religious officer; ritualism very complicated; universal offerings of maize meal and other objects

at shrines; extensive use of sand painted altars; purification by emetics and head-washing; two sets of priests and ceremonies, one for summer, the other for winter; many societies or cults; a snake dance among the Hopi²⁴ and a rain ceremony at Sia are special demonstrations; the most common are the kachina ceremonies, part of which are masked dances; mythology characterized by migration tales.

The Pima²⁵ once lived in adobe houses but not of the Pueblo type; they developed irrigation but also made extensive use of wild plants (mesquite, saguaro, etc.). They raised cotton and wove cloth, were indifferent potters, but experts in basketry. The kindred Papago were similar, though less advanced. The Mohave, Yuma, Cocopa, Maricopa, and Yavapai used a square, flat-roofed house of wood, did not practise irrigation, were not good basket makers (excepting the Yavapai), but were otherwise similar to the Pima. The Walapai and Havasupai were somewhat more nomadic. Among all these ritualism was weak in contrast to the Pueblos, but we have very little data on the subject.

In some respects the Pima and their ethnic neighbors appear to be transitional to the Pueblo type, but when we come to the Athapascan-speaking tribes of the eastern side of the area we find some intermediate cultures. Thus, the Jicarilla and Mescalero used the Plains tipi; they raised but little; gathered wild vegetable foods and hunted buffalo and other animals; no weaving, but costumes of skin in the Plains type; made a little pottery; good coil baskets; used glass-bead technique of the Plains. The southern Ute were also in this class. The western Apache differed little from these, but rarely used tipis and gave a little more attention to agriculture. All used shields of buffalo hide and roasted certain roots in holes. In general, while the Apache have certain undoubted Pueblo traits, they also remind one of the Plains and the Plateaus.

The Navajo seem to have taken on their most striking traits under European influence; but their old type of shelter is again the up-ended stick type of the north, while their costume, pottery, and feeble attempts at basketry and formerly at agriculture, with their strong leaning toward ritualism, all suggest Pueblo influence.

Thus, in the widely diffused traits of agriculture, metate, pottery, and, to a less degree, the weaving of cloth with loom and spindle, former use of sandals, a similar social system, and intense ritualism, we have common cultural bonds between all the tribes of the Southwest, uniting them in one culture area. In all these the Pueblos lead. The non-Pueblo tribes skirting the Plains and Plateaus occupy an intermediate position, as, doubtless, do the tribes to the southwest, from which it appears that, after all, we have but one distinct general type of culture centering in this area.

10. *The Nahua Area.* We have just seen how the Pueblo type of culture centered in the upper Rio Grande Valley and how its varying characteristics extend down into Mexico. It is clear from the historical data of the Spanish conquest that when Cortez landed on the Gulf Coast there was one center of culture for the whole stretch of country between the Rio Grande and Lake Nicaragua, and that its most typical representative was the Aztec group round about the City of Mexico. Yet, the Tarascan, the Zapotec and the Mixtec were almost equally typical, while somewhat less typical were the Totonac, and the Otomi.

Some centuries before the discovery of America, the center of the area was in Yucatan, among the Maya, whence it seems to have shifted to the northern tribes we have just noted. Within the bounds of this older center are found the most impressive ruins in the New World (p. 102). While we cannot connect any one ruin with a specific surviving Maya group, it is certain that the builders of all of

them were members of the Maya stock. The attainment of this result is one of the most important triumphs of our science, for had we been unable to so connect these ruins with the Maya, we should find the whole Mexican-Central American problem extremely baffling.

The Spaniards found the Maya in eighteen or more independent tribal groups, no longer living in pretentious cities, but no doubt representing the original social units forming the ancient Maya federation. That they were still of a culture type, comparable to the Aztec group, is indicated by extensive agriculture (maize, peppers, beans, cacao, etc.), the domestication of bees for the honey and the wax, weaving of cotton so fine that the Spaniards mistook it for silk, large canoes, and trade with Cuba, hieroglyphic books, a gentile organization with animal names, etc. Archæological research has revealed their former ascendancy in architecture, art, calendar systems, and astronomical knowledge. A great deal of these specialized traits of culture passed to the Aztec, but one feature in particular seems to differentiate Maya culture: *viz.*, the absence of copper tools. Their culture was essentially a stone age culture, which used copper and gold, particularly the latter, only for ornament. In the smelting and casting of gold they were very skilful. Thus we have in the ancient Maya a fine example of the height to which a people may rise with only tools of stone and wood. While the later Aztec culture was in foundation a stone culture, it went somewhat farther than the Maya in the development of copper tools, but not so far as did the Inca of Peru.

The present state of native culture in the Central American States is quite the reverse of what the archæology would lead one to expect. This is particularly true of the Maya area in which quite primitive and loosely organized groups of people are found still speaking Maya languages. One of these groups, known as Lacandones, has been carefully

studied ²⁶ and may be taken as the general historic type for the whole of Central America. Its characteristics are: agriculture, hunting and fishing, carried on about in the same proportion as in the Amazon country; maize, potatoes, a yucca, calabashes, tobacco, corn, etc., raised; cotton raised and spun; some pottery; bees domesticated; bows and stone-pointed arrows; water drums; gourd rattles; the ceremonial life simple, consisting in the main of an annual renewing ceremony and numerous offerings, from all of which women are excluded. Strange to say, no knowledge of the calendar system and writing of the Maya period survives, for Maya intellectual culture being exclusive to the priestly class, either passed over to the Aztec conquerors or into oblivion.

Aztec culture embodied traits similar to those of the Maya.²⁷ They had a highly organized government and maintained armies; a gentile social order with gens land rights; intensive agriculture, maize, beans, peppers, gourds, cotton, fruits; intoxicating drink, or pulque, from maguey plant; were skilful builders; made ornaments of gold, silver and copper, cast in molds of wax, clay and charcoal; made some tools of copper and tin; a gold wire technique from which filigree work was derived; fine feather mosaics by the glue method for which large aviaries were maintained; work in obsidian and jadeite highly developed, cutting tools, mirrors and ornaments; stone mosaic ornaments; finely woven cloth of cotton and agave with excellent dyes; fair potters; books on parchment and on maguey paper; an organized priesthood in whose hands were education and higher knowledge, literature was cultivated; separate schools for girls and boys maintained; children of a social class only, educated; a calendar system derived from the Maya, and an elaborate religious system in which sacrifices were prominent; rituals recited in the temples for regular parts of each day and night and almost constant

sacrificing of quails, rabbits and flowers; at certain human sacrifices some of the flesh was ceremonially eaten.

Just how far north and south the full series of Aztec traits was diffused cannot be stated, but for many years preceding the landing of Cortez they had been subjecting tribe after tribe and forcing upon them their own culture. The efficiency and character of their political system has been presented with great clearness by Bandelier.²⁸ To the north, beyond the Tarascan were the Otomi, by tradition the forerunners of the Aztec, but in later times, at least, less typical. Still further north we meet the Pima-speaking tribes, Huichol, Cora, Mayo, Yaqui, etc., whose culture is clearly intermediate to that of the Aztec and the Pueblo area. Just what the relative values may have been in the past will doubtless be revealed by future research.

Immediately to the south were the Mixes, Zoque, Chiapanec, etc., some of which appear in early Spanish writings as wild savage cannibals, but their later docile appearance discredits these old accounts. Yet we may be certain that they were of less culture than the Aztec or truly intermediate.

SOUTH AMERICAN CULTURE AREAS

II. *The Chibcha Area.* On the southern frontier of the old Maya territory we meet such peoples as the Lenca and Xicaque of less intense culture, but still manifesting many of the fundamental traits of the Nahua center. Yet when near the boundary of Costa Rica, we find wilder tribes with cultures suggesting South America. Just across the line we meet with the Chibcha-speaking Talamanca and the Chiriqui. From here down through the Isthmus we seem to find an increasing number of such traits as poisoned arrows, fish poisons, hammocks, and palisaded villages, all highly characteristic of South American cultures. In fact, the whole isthmian country from the lower part of Nicaragua

down is a marginal part of the Chibcha culture area, centering about Bogota, Colombia.

Throughout this area we have environmental conditions similar to those surrounding the Maya, for the whole outer marginal circumference is studded with wild tribes and even the highly organized groups comprising the center in Colombia have some of these lowly folk interspersed among them.

The dominating stock was the Chibcha, whose culture may be taken as the type.²⁹ Like all Andean peoples, they were agricultural, producing maize, potatoes, manioc, beans, and squashes; no domestic animals for transportation; irrigation systems highly developed; salt was made on a large scale and traded to outlying tribes; cotton was raised and weaving highly developed; fine dyeing; no stone buildings, cane and thatch the rule, walls of wattling, plastered with clay; roads and suspension bridges; no copper, but great skill in gold work, in fact, the center of the art for the New World; a clan organization, or maternal descent; a kind of caste system; one tribe, the Panche, is credited with exogamous clans; no evidence of books or calendar systems; human sacrifices to the sun as an incident in sacrifices of all kinds; an infinite number of local shrines where some power was assumed to be manifest to which offerings were made; five sacred lakes; an organized priesthood with a single head; ceremonial foot-races; coca chewing instead of tobacco and great use of chicha; but some tobacco was used both as snuff and for smoking in stone pipes; a mythical white man who was the culture hero, called Bochica; a deluge myth; an Atlas idea of the world; a fairly compact political organization; tribute or taxes in gold and cloth chiefly; a commercial system with markets, and a kind of currency. For further details, see the proper heading under archæological classification.

As to just how far the intermediate fringe of this culture

extended into Venezuela, we cannot say, but from archaeological evidence it seems to have reached out well into the highlands of the interior. On the south, it met Inca influence in Ecuador.

12. *The Inca Area.* The approximate northern border of the Inca area is near the equator, in the highlands of Ecuador, and its southern limits somewhere in the Atacama desert of Chile. It is remarkably narrow, following the coast belt of elevated Andean country. Another peculiarity is that the descent to the low level of the Amazon is abrupt, without the usual broad belt of plateau land, and in keeping with this, we find strong contrasts in culture, the intermediate tribes being chiefly in the north and south. Yet, as we shall see in another place, some Inca traits did find their way down into the lowlands.

The dominating stock languages are the Quechua and Aymara, having northern and southern distributions respectively.³⁰ Reference to the linguistic map will show a few minor stocks, chiefly in the south, who form in the main an intermediate group. Among the largest of these are the Atacamas of northern Chile. Two small remnant stocks, the Puquinas and the Lecan of Lake Titicaca and the Changoan of the north Chilean coast were simple fisher folk who had acquired but few Inca traits, and who may be considered surviving remnants of the earlier population.

Reference to a relief map shows a marked eastern extension of the Bolivian highlands, where we find a veritable swarm of minor stocks not found elsewhere, together with a few straggling Carib, Arawak and Tupi. On their eastern frontiers are successively the Amazonian forests and the Chaco. In culture we find here all degrees of transition. The truly upland groups are rather sedentary and agricultural, some maintaining temples and organized priesthoods. The Manacicos (Chiquitan) and Canichanan had palisaded villages as in eastern Brazil; the former a gentile organiza-

tion and made good pottery, but the latter were considered cannibals. Cannibalism, in fact, is charged to a large number of these groups.

In the north, in what is now Ecuador, were the Cañarian, who by their high development of gold work take a position intermediate to the Chibchan center; but their inland neighbors, the Jivaran, are more like the wild Amazon tribes.

The chief characters pertaining to Inca culture are: an organized government based upon gentile groups; the supreme authority resting in a council who appointed from a hereditary group a war chief, or Inca (see p. 156), agriculture advanced, maize, manioc, peppers, potatoes, fertilization with guanaco and other manures, elaborate irrigation systems; domestication of the llama, with the dog, guinea pig, birds, and monkeys as pets; some fishing on the coast and hunting in the interior; spinning and weaving highly developed, cotton cultivated, vicuña wool, elaborate designs and rich dyes; pottery carried to a high state of development, both in form and design, most unique form, the whistling jar; gold, silver, and copper mined, smelted and skilfully worked; true bronze was made by use of tin; tools and mechanical appliances simple, digging-stick and spade for farming, no hoe; no saws, drilling by rolling in hands; architecture massive, but plain and severe; a system of roads; stone, and suspension bridges; some water travel by balsa; an organized army and fortifications; no writing, but the quipu as a counting device; sun worship, an organized priesthood; a mythical white man founder called Viracocha; a deluge myth; human sacrifices rare, but offerings of animals common; a series of gens gods, or *huacas*; religious orders of virgins; a sacred shrine on Lake Titicaca; conventional confessions of sins to a priest; two important ceremonies, the new-fire with the banishment of disease and the sun festival.

13. *The Guanaco Area.* Adjacent to the Bolivian highlands, the elevated lands of the headwaters of the La Plata drainage are known as the Gran Chaco. This is a rolling, wooded, and, in part, swampy plain. Farther south it merges into the Pampas, a level, treeless prairie. Still farther south, we have a more elevated, scantily wooded country in Patagonia. This whole stretch, together with lower Chile, may be taken as one area, though geographical diversity gives certain distinctions. The most intensive culture lies with the Guaycuruan (Abipones, etc.), Araucanian, Puelchean, and Calchaquian stocks.³¹ Engulfed by them are such tiny groups as the Lulean and Allentiacan. On the south, we note the Chonoan of the Pacific Coast, who seem to have resembled the Alikulufan, Onan, and Yahganan farther south. The eastern slope of Patagonia was occupied by the Tsonekan (Tehuelche). Such of these as occupy the coast line live largely upon sea food. So did their ancestors, as indicated in numerous shell-heaps.

The culture of the typical group reminds one of the North American Plains area. The Spanish colonists introduced horses and cattle and very quickly the natives became horse Indians, hunting wild cattle.³² As such, they were nomadic and in the main did not till the soil, but in some cases did raise a little maize, etc., just as did some of the intermediate Plains area tribes of North America. All of the central group seem to have woven some cloth, but developed work in skins more extensively; the weapons were the lance, bolas and lasso. A skin boat suggesting the bull-boat of the Plains area was used for fording rivers; warriors rode into battle naked; dead were placed upon platforms, but the bones were afterward buried; smokers mixed tobacco with wood shavings, as in North America.

In the historic period the natives of this area developed an intense horse culture. In many respects this complex was like the horse culture of the North American plains,

because it was acquired from the same foreign source. Yet we find in the guanaco area several new features, as the bola, the lasso, and the toe-stirrup. These highly original traits of the horse complex are found among all the typical tribes enumerated above, making it clear that even though they were original inventions, they must have been in their present form diffused from one center along with the horse. Habitations vary a great deal, but still are simple affairs of skin or mats supported by a ridge pole, in many cases without smoke holes. A common form is a kind of skin-covered lean-to. Infants are secured on a board or frame, as in North America (Fig. 10). Among the more primitive tribes the men wear aprons and a robe, the latter giving way to a cotton breechcloth among the Araucans. The footwear consists of a kind of skin boot with long trailing hair from which we get the name Patagonia (duck feet). This boot has an open toe so that the toe stirrup can be used. Yet the prevailing tendency of the area as a whole was to go bare-foot.

As we go south in the area, the culture becomes more primitive until at last we reach the Fuegians, who are a seashore people. Still they have much in common with the horse-using tribes of the mainland and are often taken as the surviving remnant of the older population in the area. It is clear that in the period of horse culture the Araucan, Puelchean, Guaycuruan, and Calchaquian tribes were the most strongly developed. The former had a kind of confederacy based upon the family group and had the dual peace and war chiefs observed in the area of higher culture; great value was placed upon oratory. They practised some agriculture and weaving. Shamanism was not well organized, but each local group had at least one such official. Eyebrows and face hair were plucked out, but the lip plug of the Brazilian tribes was not worn. The Abipones, at least, were composed of social castes and had four gentile groups

placed in the four directions, reminding us of North American cultures.

The Araucans were clearly intermediate to the Inca center, as indicated by the large use of chicha, tendency toward agriculture, the domestication of sheep and the wearing of wool in later times, great developments of animal and human sacrifices with features closely paralleling those of the north.

The Fuegians and other stocks skirting the western and southern coast were not horse Indians, but developed the use of canoes; built fires in them upon clay hearths; went almost nude even in winter; lean-to shelters; bolas not used but the bow and spear; water-tight baskets; iron pyrites used for fire-making; dogs trained for hunting and even to drive fish by swimming. Some early accounts credit the Chonoans with weaving blankets from dog hair, reminding us of the Salish stock of the northern continent.

When we turn to the north and east, we again meet the complex condition of the Bolivian highlands, for the Chaco is continuous with it. Here is the home of many stocks and representatives of others widely distributed.³³ In the main, the culture of these people is intermediate to that of the great Brazilian area, since we find the lip plug now and then, urn burial, the short wooden club, dug-out canoe, etc. The Charua cut off fingers when in mourning, as is done in some parts of North America.

14. *Amazon Area.* Our discussion so far has disposed of all the continent except the Amazon-Orinoco drainage. We see from a map that this drainage comprises fully half the continent. Turning to the linguistic map (Fig. 70), we find it dominated by four stocks: Arawak and Carib in the northwest, Tupi and Tapuya in the southeast. Of these, the former pair is by far the most widely distributed, occupying the whole of the Antilles, the greater part of Venezuela, Guiana, and northern Brazil. It is truly curious how the numerous small stocks of the continent cluster around

the very headwaters of the Orinoco and Amazon, as if some of the powerful peoples of the interior had invaded the area from without, sweeping up the rivers and driving all before them.

At first glance, the four main stocks seem to be promiscuously scattered over the area, but if we refer to a relief map we may note that their distribution is coincident with elevation. The Arawak are a lowland people, while the Carib hold to the higher lands, almost without exception. On the other hand, the Tapuya stick close to the high tablelands of Brazil, while the Tupi skirt the coast and up into the lower Amazon. Therefore, we can with a fair degree of confidence lay down the geographical lines along which the expansion of these stocks took place, though as to the directions of movement we cannot be sure. Since the Arawak are most widely distributed over the Antilles and hold to very low lands on the continent where they travel by rivers, on general grounds it would seem likely that their center of dispersion was among the Islands. The Carib, on the other hand, are most intensely distributed as an inland people, from which it has been inferred that such of them as took to the sea borrowed this trait from their Arawak neighbors.

Good studies of the Amazon tribes are rare, but it so happens that the few best are so distributed as to give us the probable range of traits throughout. For the Japura River, or the northwestern section of the area, we have Whiffen's ³⁴ account of the Witto and Boro, whose culture, together with that of their immediate neighbors, may be characterized as follows: live by hunting, fishing and agriculture; raise manioc, tobacco and coca, and to a much less extent maize, yams, pumpkins, peppers, sugar-cane, etc.; fields cleared by fire and dug up by digging-stick, no hoe; no tame animals, even dogs rare; all animal life eaten, the monkey being the most nearly staple; honey prized, some tame bees; cassava bread and the "pepper pot," the chief



Fig. 60. Distribution of Forests in South America. Zon, 1916. 1

support; manioc squeezed by rolling in a mat; coca chewed and minora seeds snuffed; tobacco used for ceremonial drink only; curare and other poisons; blowgun, throwing spear, bows, paddle clubs; fish caught by poison, also with hooks, nets, traps and a tri-dent spear; clay eaten; cannibals, eat prisoners; drum signalling; drums in pairs, male and female, phallic decorations; palm fiber rolled on thigh and hammocks made; pottery; basketry; no metal, little stone, tools of wood; dug-out canoes, sprung into shape when hot from burning out; trees felled by holes and wedging; large wooden mortars for coca, tobacco and maize; habitations and fields shifted often; whole community in one house, large and square, four posts inside, thatched, no smoke hole; clearing around house, but all concealed in jungle by maze-like path; no clothing except bark breechcloth for men; combs of palm splints for women; human tooth necklaces; ornamental ligatures, nose pins, leg rattles, elaborate body paint; palaver with a kind of black drink of tobacco for all important undertakings of war or peace; the couvade; women not permitted to join in serious ceremonies and not to see boys' initiations, not allowed to join a cannibal feast; personal names not spoken, even true names of mythical characters are whispered; shamanism (*paye*) important, tricks crude except "voice-throwing," sucking for disease, but detecting evil spirits the chief function of a shaman; two serious harvest ceremonies, manioc and pineapple; boys cruelly whipped in puberty ceremonies; ordeals of stinging ants; many social dances; formal recital of one's grievances and a kind of riddle dance; pan pipe, flute, castanet, drum, gourd rattle; each house group exogamous, paternal descent; monogamy, each house has a chief, all adult males the council; many tales resembling European folklore and many animal tales reminding one of African lore; sun and moon venerated; grave burial.

In Guiana³⁵ we find most of these same traits, but what

seems to be a higher culture, since here we have cotton cultivated and spun and the typical cassava squeezer. The Arawak peoples also have a clan organization, maternal descent. None of the Guiana peoples use coca, but smoke tobacco, cigar fashion; the signal drum is absent. The house is similar in form but smaller, the tendency being to form villages; yet as we go in from the coast the transition to the large community house is rapid.

On the south of the Amazon we find the higher culture among the Tupi of the Brazilian coast. The new traits are: smoking tobacco in stone pipes, palisaded villages, fine stone tools, urn burial; but otherwise the culture compares concisely with that of the Arawak and Carib of Guiana. A few small stocks have similar culture, but on the interior plateaus were the Tapuya (the Botocudo, etc.), who stand somewhat apart from their neighbors.³⁶ All reports considered, these tribes are of low culture and notorious cannibals. They were non-agricultural, did not work stone and made little pretense of weaving. These negative traits and a few positive ones tend to group these people with the Patagonians. If it is true that the Tupi tribes pushed out from the interior and dispossessed the Tapuya, we may consider the earlier existence of a Brazilian extension to the great hunting areas in Argentina and Patagonia. This is made probable on geographical grounds as reference to the forestry map will suggest. Anyway, it is clear that by culture the Tupi belong with the tribes of the Amazon, while the Tapuya belong elsewhere. With the latter eliminated, we have great uniformity of culture throughout. Yet the Tapuya share certain traits with the South Amazons, particularly the large lip plug and, as may be expected, a number of their neighbors in the Matto Grosso show simpler forms of Amazon culture.

Turning again to the Amazon area, including the Tupi, we have remarkable uniformity in the following from north

to south and east to west: agriculture; canoes; hammocks; pottery; blowgun; a thatched post-supported house with gable; sword clubs; leg and arm binding; certain types of feather-work; human bone flutes; calabash rattles; use of honey and wax; cannibalism; certain kinds of dance masks; couvade; ceremonial whipping of boys, and women barred from ceremonials. This is truly a formidable list. There are a few traits with partial distribution; thus, on the south side of the Amazon we frequently find the lip plug in contrast to the north, though it has a close analogy in Guiana. Again, on the south, urn burial is frequent, on the north, grave burial. Coca chewing and tobacco drinking are found in the west, tobacco smoking in the east, pipes in Brazil, and cigars in Guiana. Also, in eastern Brazil we have the pellet bow and the palisaded village. These, however, do not negate the unity of Amazon culture.

Consistent with the wide distribution of these traits is the fact that we have in reality an area of canoe culture. Constant river travel made diffusion easy and sufficiently accounts for the wide range of certain stocks, for the low Amazon Basin is a dense tropical forest through which the rivers are the only roads open to man. Consequently, we have a well-developed canoe complex. Temporary canoes are formed by scraping out the soft interior of a palm trunk and expanding the sides by a brace, and true bark boats are sometimes made by stripping the bark from a large tree, precisely as the Iroquois and some other North American tribes do, in contrast to the fine birch-covered canoe of their Algonkin neighbors. But the real boat is the wooden dug-out. As to the absolute universality of the canoe in the Amazon Basin, there is some difference of opinion, but since it is found wherever we have good data, we may expect that it is a common trait of all.

While more data will certainly bring out greater tribal differences, yet it appears that an unusual degree of uni-

formity is found from the mouth of the Orinoco down through the entire Amazon basin. As we have noted, the only lines of movement are the rivers, and since these are gathered into one great system, we may expect culture traits to travel far. Colonel Church³⁷ has shown how certain stocks have moved westward in the open country along the southern rim, detached groups starting down the tributaries of the Amazon here and there, to be dispersed far and wide over its great expanse. One can scarcely escape the conviction that the peopling of the interior was relatively late in consequence of which the culture at the center is quite like that upon the edges of the basin. On the other hand, the apparent remarkable conservatism of the natives which has preserved this culture in spite of two hundred years of contact with civilization, may be due to this culture being the only one that can successfully cope with the forests.³⁸

15. *The Antilles.* Finally, we have the Antillean insular area, properly discussed here because it has more affinities with the Amazon area than with any other. Unfortunately, the native life of the more important islands was so completely stamped out by the Spanish conquerors that a comprehensive view of native culture is impossible. Yet, from the narratives of the period, some significant data can be gleaned.³⁹ So far as we know the pre-Columbian population was first pure Arawak, but later over-run by Carib. This at once connects the island culture with the canoe culture of the Amazon-Orinoco drainage. Among the distinctive traits are manioc culture, raising of cotton, use of the hammock, tobacco taken as snuff and inhalation, ceremonial emetics, fish poisons, cigars instead of pipes, all of which remind one of the Amazon area. On the other hand, in this area we see a population spread over a large crescent of islands. Such physical separation usually emphasizes insular individuality in culture, but again throws into high relief widely flung similarities which suggest a basic pattern in culture.

CULTURE CENTERS

The areas we have passed in review have certain geographical individualities and point the way to problems in aboriginal New World economics and human ecology. It is easy to become so interested in mythology, ritualism, art, etc., as to ignore the stark necessities like food, shelter, and defense daily confronting the Indian. His society seems to have subordinated everything else, even his sex life, to these necessities. The contacts between tribes were largely confined within the geographical area in which they found themselves. It is not surprising, then, that when the cultures of the tribes in any one of these areas are well known and their various traits carefully studied, a general pattern emerges, which not only characterizes the phenomena, but tentatively reveals what seems to be the cross-section outline of a development, historical or genetic, according to definition. For instance, though some anti-classification-minded anthropologists have pointed to the Eastern Woodland area as one of hopeless diversity in culture, Speck, the outstanding authority for that region, has not only shown how a fundamental pattern forms the framework for the tribal cultures of the area, but that as formulated, this framework promises to integrate with the prehistory of the region. If the reader wishes to understand what a regional development in culture is like, he should study Speck's statement for our Area 7.⁴⁰ Also he should read Kroeber's analysis of Area 3.⁴¹

When using the classification indicated in Fig. 58, one should remember that most of the North American data for Areas 1 to 9 were gathered between 1890 and 1920, the era of intensive field study. Since that time field-work has been largely supplementary. Though the older literature was searched for culture data, these have been found fragmentary and largely confirmatory to field study records.

Thus, our classification deals with contemporary cultures and presents a cross-section of tribal life at that time. It is important to bear this in mind when evaluating these results. We are dealing with living tribes of the period 1890 to 1920; we may project these cultures backward, but rarely beyond 1850, because no living Indian could remember much happening at earlier dates. Hence, when we use the term aboriginal, we mean tribal practices since 1850. Some traits of culture may be shown to be older, if recorded in the literature of the Colonial period, but there are no early accounts approaching the standards demanded in publications after 1890.

One need not go far in the study of an area before recognizing that one or more tribes dominate. This dominance is transient; so to secure a dynamic view of culture in one of these areas, we must view the constituent tribes in the light of contemporary data. During their ascendancy, the dominating tribes, conscious of their power and energy, were centers of influence. Thus, during the period between 1600 and 1780 the Iroquois dominated the Eastern Woodland area, probably reaching their zenith about 1725. In the Plains area, the Teton Dakota and the Cheyenne moved from marginal positions into its heart, the former expanding rapidly in numbers and power, reaching their peak about 1870. They formed a focus for a central cluster of tribes whose influence is seen throughout the area. It is from such glimpses into the pageant of aboriginal life that insights arise as to the meaning of an area and its corresponding regional development. As we conceive it, the principal function of the preceding classification is to formulate problems in the history and development of the respective cultures.

A word may be added as to the geographical boundaries of the foregoing culture areas. In the first place, these areas were conceived in terms of their tribal constituents.

If these tribes had recognized political boundaries in precise terms, mapping the areas would have been easy, but since that was not the case, it seemed best to indicate the approximate locations of these areas by straight lines.

1. Teit, 1900. I; 1909. I; 1906. I.
2. Spinden, 1908. I.
3. Lowie, 1909. I.
4. Lewis, A. B., 1906. I; Ray, 1936. I; Spier, 1936. I.
5. Kroeber, 1904. I; 1925. I.
6. Goddard, 1934. I.
7. Boas, 1907. I; Stefánsson, 1919. I; Birket-Smith, 1929. I.
8. Dall, 1877. I; Jochelson, 1925. I.
9. Solberg, 1907. I; Mathiassen, 1927. I.
10. Boas, 1907. I; Birket-Smith, 1929. I.
11. Wissler, 1916. III; Rainey, 1936. II.
12. Pike, 1892. I, chapter 4; Grant, 1903. I.
13. Morice, 1890. I; 1895. I; 1906. I; Jenness, 1932. I; Osgood, 1936. I.
14. Hearne, 1795. I.
15. Mackenzie, A., 1902. I.
16. Hearne, 1795. I; Osgood, 1936. I.
17. Jones, W., 1906. I; Skinner, 1913. I; 1915. I; 1921. I; Hoffman, 1896. I; Speck, 1926. I.
18. Morgan, 1904. I.
19. MacCauley, 1887. I.
20. Swanton, 1911. I; Speck, 1909. I; Mooney, 1900. I.
21. Holmes, 1886. I.
22. Goddard, 1931. I; Hough, 1915. I.
23. Kroeber, 1917. I.
24. Hough, 1915. I.
25. Russell, 1908. I; Spier, 1928. I; 1933. I.
26. Tozzer, 1907. I.
27. Joyce, 1920. I; Spinden, 1928. I; Thompson, J. E., 1933. I; Sahagun, 1932. I.
28. Bandelier, 1878. I; 1879. I.
29. Joyce, 1912. I.
30. Markham, 1910. I; Means, 1931. I; Mead, 1932. I.
31. Dobrizhoffer, 1822. I; Cooper, 1925. I; Lothrop, 1928. I.
32. Church, 1912. I, p. 300.
33. Nordenskiöld, 1918. I.
34. Whiffen, 1915. I; Tessman, 1930. I.
35. Im Thurn, 1883. I; Roth, 1924. I; 1929. I.
36. Maximilian, 1820. I; Von den Steinen, 1897. I.
37. Church, 1912. I.
38. Bowman, 1916. I.
39. Fewkes, 1902. I.
40. Speck, 1926. I.
41. Kroeber, 1925. I.

CHAPTER XV

ARCHÆOLOGICAL CLASSIFICATION

IN museums, the usual practice is to class as archæological specimens all objects not definitely associated with an historic tribe. The somewhat arbitrary nature of this grouping is obvious, but it is justifiable, for, in the main, these objects belong to an earlier time stratum than those that can be definitely assigned to living peoples. These specimens and their distributions constitute a large part of the data for one division of our subject and have been subjected to the same kind of classification as have the culture traits of the historic tribes. Holmes¹ seems to have been the first to prepare a map of the New World, locating the various archæological areas according to the data then available. This classification is still used, subject to such revision as may be necessary to bring it up to date. However, since this classification was projected, the objective in archæology has changed; every field-worker is now intent upon stratification and sequence, and so not interested in horizontal distribution. Yet, it is from the known distribution of artifacts and the characteristics of the areas, as outlined, that the stratigrapher derives the insights which lead him to the interpretation of stratification.

NORTH AMERICA

1. *The North Atlantic Area.* This area includes all of New England and the Maritime Provinces of Canada with an indefinite inland border to the north and west, and south to the Delaware River. Its general archæological characteristics are: extensive shell deposits on the coast; the

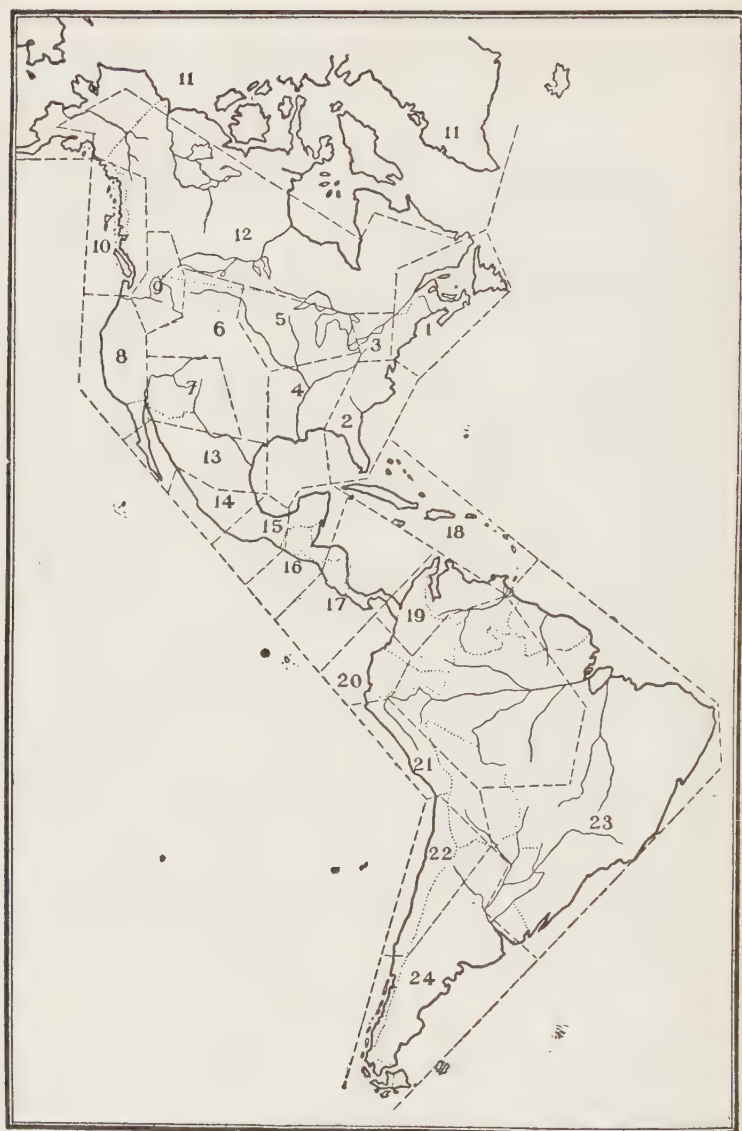


Fig. 61. *Archæological Areas*

dead interred in a flexed position and usually without accompanying objects; the absence of mounds and similar earth-works; crude pottery, with pointed bottoms (Fig. 25) and rudely stamped decorations; the grooved ax and long cylindrical stone pestle; extensive steatite quarries and ves-



Fig. 62. Types of Stone Implements from the North Atlantic Area: the grooved ax; the rounded celt; the plummet; the gouge; the bayonet-shaped point; and the long pestle

sels of the same material; and, finally, great numbers of rock-shelters.

A detailed view of the area, however, reveals at least two subdivisions: a southern including the territory from the Delaware River to the Maine-New Hampshire boundary, and a northern from that point onward to Newfoundland.²

The southern sub-area is characterized by numerous village sites, with cache pits for storage, often enclosed by traces of small defensive works. Shell-heaps are small and

relatively barren of specimens. Objects made of stone are abundant and varied, and show good workmanship; the forms include the grooved ax, rounded celt, pestles, and problematical forms,³ as banner stones, gorgets, etc. One noteworthy object is the carved stone human head, found in New Jersey. All these traits are found with much less intensity east of the Hudson where the plummet, gouge and adze appear. In the Hudson Valley proper we find some intrusive Iroquoian pottery forms. Finally, we have in this region a large number of rock-shelters.

The northern half of the area, including Maine, Gaspé, and the Maritime Provinces differs from the preceding in the relative scarcity of village sites and in the fact that when such sites are found they lack cache pits and are without defensive works, particularly east of the Penobscot. Shell-heaps are, on the contrary, large and numerous, containing a larger proportion of objects than those of the southern area, their numbers increasing as we go north and east. The same ratio holds for objects found in graves. Pottery, too, shows a change in form as we go eastward, the bottom rounded and with outcurved lip, while stamped designs increase. The grooved ax, pestle, and problematical forms are replaced by the angular celt, gouge and plummet. A somewhat divergent group of finds are those with the so-called "red-paint" burials,⁴ confined to the lower Penobscot Valley. Here stone objects only (celts, gouges, adzes and bayonet-shaped slate points) and masses of red ocher are found with certain burials.

In addition to these geographical segregations of artifacts, some advance has been made in the chronological analysis of the area. Willoughby⁵ proposes the following periods: 1, The pre-Algonkin; 2, old Algonkin; and 3, a later period, which we prefer to call protohistoric. Fig. 63 presents the geographical range of 1 and 2. The so-called pre-Algonkin (sometimes called the Red Paint peo-

ple) is credited with the adze and the gouge (curiously enough, no ax, ground or otherwise, was known), semi-lunar knife, plummets, slate points, etc. Bone and antler objects are almost entirely absent, but this may be due to decay. There is some doubt as to the justification for say-

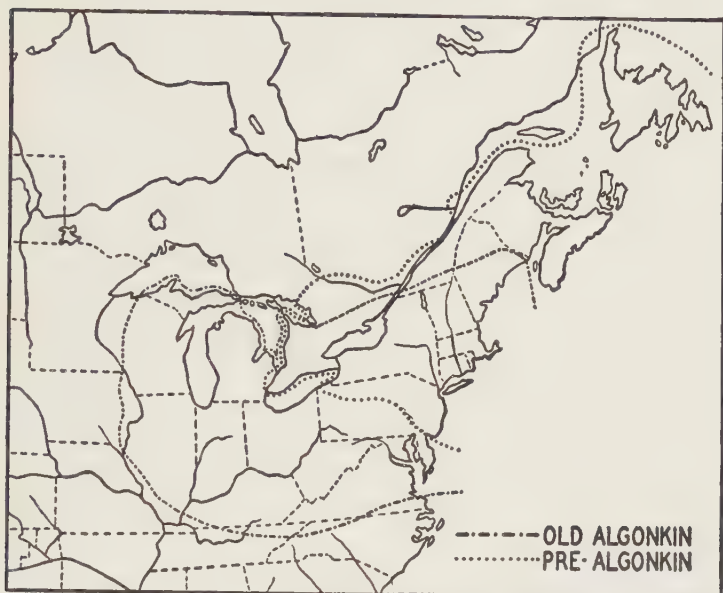


Fig. 63. Range of Pre-Algonkin and Old Algonkin Cultures. Adapted from Willoughby, 1935. I

ing that the natives of this period were not of the same stock as in the second period, but the culture sequence seems established. The old Algonkin is seen to center in Ohio and is characterized by grooved and grooveless axes, platform pipes, perforated gorgets, boat stones, bird stones, steatite vessels, pottery, some copper, etc. Shell-heaps belong chiefly to this period and yield many bone and antler objects. The protohistoric Algonkin occupied the area at the time of discovery. Their separation from the Algonkin

on the west was due to a prehistoric Iroquoian intrusion. South of New England we note that claims are made for stratification in rock-shelters, the chief distinction being the absence of pottery in the lower level;⁶ this again recalls Willoughby's pre-Algonkin. The shell-heaps of the south are too shallow to offer stratigraphy, but in Maine become favorable; yet, even here, there is little stratification, most of the shell deposits showing pottery and other old Algonkin characters. This raises an interesting question as to the age of shell deposits in the area, suggesting that the pre-Algonkin was an inland culture. However, this sounds a little strange and since it is the universal opinion that too little field-work has been done in the area, we should leave the question open.

2. *South Atlantic Area.* As indicated on the map, this area includes the South Atlantic coast plane and Florida. Shell-heaps are even more abundant than in the North Atlantic area and in Florida attain astonishing proportions. Large domiciliary mounds and low burial mounds are also numerous along the coast and rivers, particularly the St. Johns in Florida. The area, as a whole, may be divided into three districts: Georgia and northward, west Florida on the mainland, and peninsular Florida. Several distinct forms of burial have been noted, extended (the body at full length, as is our custom), flexed (legs drawn up against the body), bone burial (body exposed until flesh decays, when bones are interred), and cremation. Urn burial is also frequent here, a trait widely distributed in South America. Again, whereas in the North Atlantic area objects of any kind are seldom found in graves, they are here numerous, particularly small pottery figures. Some attempts to work gold and copper were made. In contrast to the preceding area, very few grooved axes occur, as is the case in the Antilles to the south, and the celt forms of the area are also said to suggest those of these islands. Occasionally,

a kind of perforated ax is found somewhat similar to those of South America. Stone-tempered pottery is abundant, but limited in type, and though without color decoration is ornately treated with stamped and incised designs. Clay pipes are of angular trumpet shapes with bowls expanded into human or animal heads. In contrast to the North Atlantic area we find many objects made of shell, in particular a trimmed and perforated conch suggesting its use as a hoe. Among other features are finely carved stone bowls and curious stone plates, or disks.

The remains from west Florida stand somewhat apart from the typical culture, as outlined above. Here cremation is rare, but with the urn burial, sometimes occurs. Large deposits of pots are often found with the burials, the forms in some cases suggesting a distinct type of mortuary ware. In common with burials on the peninsula, the accompanying pots were almost invariably perforated through the bottom, or "killed." But in addition to this mortuary pottery there is great variety of ornamental and useful vessels. The forms suggest both those of Area 4 and the types found in Georgia (Figs. 23 and 24). Tobacco pipes are heavy and angular. All these differences are, however, in keeping with the marginal culture position of west Florida.

The peninsula also presents marginal peculiarities. Its distinctions lie in the enormous shell-heaps and a highly developed type of ready-made mortuary pottery, bizarre in form, with the perforation made previous to baking; also mortuary pottery arrow points. Again, there are suggestions of cannibalism on the St. Johns and of pile-villages in the south, features prominent on the adjacent coast of South America.

In the way of chronological distinctions little more can be said than was revealed in a large shell deposit near Oak Hill, Florida, where, according to Nelson,⁷ three strata

are observable: the deepest layer bears no pottery; the middle, plain pottery; the upper, decorated pottery.

3. *The Iroquoian Area.* Adjacent to, and in a sense between, the North and South Atlantic areas, is an inland elevated region centering in New York and Pennsylvania.



Fig. 64. *Distinguishing Iroquoian Types: the flat celt; triangular arrow-heads; and trumpet-shaped pottery pipes*

This was the range of tribes speaking Iroquoian languages and it is from the immediate ancestors of these tribes that by far the greater part of our museum collections come.

Iroquoian villages were characterized by defensive walls of circumvallation, their burials by large ossuaries, and their stone-work by lack of variety. A peculiar celt and adze of rectangular cross-section are found to the exclusion of the grooved ax and gouge. In the southern half of the area a chipped celt is typical. The triangular arrow point is

abundant and the long stone pestle inconspicuous. Yet the distinguishing feature of Iroquoian archæology is a highly unique form of pottery (Fig. 25). It is well made, with globular body, constricted neck, and overhanging or flaring collar, bearing rectilinear incised decorations. The characteristic form prevails in the east and south of the area; in the western part the vessel is somewhat squat with short neck turned outward into a notched rim. The typical pottery pipe is trumpet-shaped, slightly bent, with the bowls representing miniature pots, animals, etc. Finally, note should be made of the richness and variety in objects made of bone and antler.⁸

The prehistoric Iroquoian overlies the old Algonkin as defined by Willoughby⁹ (Fig. 63), though first demonstrated by Parker. This is taken as further proof that the Iroquoian-speaking tribes moved into this area in relatively late prehistoric time. Iroquois sites yield materials which link them so closely to the historic culture of that people, that the archæologist finds little difficulty in integrating his findings with the living culture.

4. *The Mississippi-Ohio Area.* The most striking feature here is mound building. Mounds are numerous in the eastern half of Area 5, but the area now under consideration is conspicuous both for the number and variety of its earthworks.¹⁰ Here we find the huge pyramidal mounds of Cahokia in Illinois, Etowah in Georgia, not to mention somewhat smaller examples of this type. Conical mounds are the most numerous, of which there are several unusually large ones, as Grave Creek Mound, West Virginia, and the Miamisburg Mound, Ohio. Circular redoubts are frequent in the northern half of the area and extend into Area 5. Another type is the so-called hill-fort, frequent in the Ohio drainage, characterized by redoubts following the crests of flat-topped hills; the best known and perhaps the largest earthwork of any kind in the world is Fort Ancient,

Ohio. It is the opinion of archæologists that few of these were used as forts, but were ceremonial in objective. Finally, though effigy mounds are rare in this area, the huge Serpent Mound of Ohio is the finest example of such mound architecture. These mound-building cultures vanished from the Ohio Valley before the discovery of America.

Pottery is abundant. (See Fig. 23.) Here we find fine bottle-shaped vases and many life forms, including human figures. Color is used in decoration, especially in Arkansas. The region of highest development in pottery can be roughly defined by a circle inscribed about Memphis, intersecting Nashville, Tennessee. As one goes north, color disappears and pottery becomes cruder, taking on characters pertaining to Area 5.

Of stone objects, we may note the fine discoidal stones south of the Ohio. Also large stone pipes in animal and human forms, often finely carved. The grooved ax is rare and practically absent in the south half of the area. Shell objects are numerous; particularly striking are the engraved gorgets and the so-called hair pins.

Some of the unique objects characterizing the area as a whole are: occasional truncated mounds; stone box-like graves; large effigy pipes; color decoration of pottery and skilful modeling of life forms, particularly the human head; numerous gorgets of shell and stone; reel-shaped copper ornaments; spool-like earplugs; large chipped blades variously designated as spades and hoes; unusually large caches of chipped blanks and occasional repoussé copper plates. Incidentally, the designs on these plates and on certain shell gorgets bear close resemblance to Middle American styles.

In Ohio, the main mound cultures¹¹ recognized are Fort Ancient and Hopewell, which are possibly contemporaneous. Fort Ancient culture was first located in the Miami Valley, but extends into Kentucky and Indiana. Hopewell culture was first defined as observed in the valley of the Scioto

River, Ohio, but has been traced as far afield as Michigan, Indiana, Illinois, Iowa, Kentucky,¹² Wisconsin, New York, and even to Florida. This seems to be a highly specialized culture in the Scioto Valley, but the wide, somewhat exotic, distribution of certain of its pottery styles raises a group of interesting problems. Just what is the relation between Hopewell and Fort Ancient is far from clear.

No consistent chronology has been announced for this area, but it is believed that the so-called Algonkin (Fig. 63) extends well down into it and in so far as this proves true, will be found to underlie the more highly specialized cultures. It is considered established that certain ancient sites on the lower Mississippi were occupied by the ancestors of the historic Natchez,¹³ so we may expect in the near future a complete chronology for those localities. A tentative sequence has been established for the Caddo peoples in southern Arkansas and adjoining territory, and assuming that this is their original home, we have the dim outline of a development which culminated in the historic Wichita, Pawnee, and Arikara. Though less well supported, it has been conceived that the Iroquoian group began on the lower Mississippi, also expanding north and eastward. Finally, note should be taken of the apparently old primitive cultures in the Ozark Mountains which remind one of the Basket Makers in Area 7. However, for Kentucky some chronological data are available. Funkhouser and Webb¹⁴ excavating a large number of rock-shelters found them consistent in stratified ash layers, indicating a reasonably long period of culture history, beginning with simple stone, bone, and shell complexes and ending with pottery and textiles; interestingly enough, no tobacco pipes were found in any of the layers. These observations check rather well with the observations of others, suggesting that these rock-shelter sequences precede the richer mound-

builder and village site complexes found in all parts of Kentucky.

5. *The Great Lake and Upper-Mississippi Area.* This is a mound area also and for that reason may be but a part of the preceding; yet, the well-developed copper industry south of Lake Superior and the specialized type of effigy mound in the same region are generally considered as sufficient warrant for the designation of a separate archaeological area. Small mounds¹⁵ occur in most parts and there is no reason for believing them historically independent of the whole mound trait extending from the Gulf Coast northward, but the aboriginal copper workings previously referred to give this outlying culture area a unique position. The most distinctive forms of copper objects found here are the socketed ax, or spud, which may be interpreted as a hafting adaptation to metal. Some of the copper arrow points are notched like those of stone, but others have a socket similar to the spud. A few copper axes duplicating the form of the grooved stone ax have been found here, and in the area to the south, but the usual form of ax is a simple celt-like blade without grooves or socket. Knives are common. Ornamental objects are not so numerous as in the preceding area, particularly the fine repoussé work of southern mounds.

Peculiar features in Michigan are the "garden beds," ridged or furrowed tracts, the use of which is by no means obvious. Of stone objects, the most peculiar are the fluted ax, faceted celt, and problematic forms. The latter include banner stones, bird and saddle-shaped stones, etc., and extend eastward into the northern half of the North Atlantic area. They are rarely found in graves and seldom in mounds, and for this reason have been regarded as older even than mound culture. Yet their distribution corresponds closely to the known Algonquian linguistic area and the Eastern Woodland culture area, a fact that must be con-

sidered in estimating their chronological positions.¹⁶ Another feature is the use of catlinite, a handsome red stone, for pipes, which though limited as to sources, yet found its way over the entire area.

The archæology of the Missouri River Valley, especially the immediate lowlands and eastward across the Mississippi, is receiving attention from a number of investigators. As suggested in Fig. 63, the old Algonkin has its counterparts here; bone and antler objects are conspicuous, but the stone scraper, celt, and grooved ax do occur.

Some progress has been made in chronology, a convenient summary of which is given by Strong.¹⁷ The earliest culture horizon seems to be continuous with the old Algonkin of the east. This horizon shows a tendency to reach out on all sides of the Great Lakes and traces of it have been cited in the far southeast and the lower Mississippi. It may eventually prove one of the most important prehistoric horizons. In Iowa and the borders of adjacent states, something overlies the Algonkin, frequently spoken of as Nebraska-Siouan, since it seems to integrate with the historic Siouan (Dakota, Yankton, Ponca, Omaha, Mandan, Hidatsa, etc.). Historic Siouan peoples were found in Area 4 and it has been proposed that their ancestors were responsible for Fort Ancient culture. West of the Missouri River the Caddoan (Pawnee and Arikara) intruded from the south and archæologically seem contemporaneous with the Nebraska-Siouan.

For the whole of the Mississippi drainage, north of Cairo, Illinois, and eastward to the Atlantic, a few general horizons begin to emerge. For Illinois, two main horizons have been proposed, Woodland and Mississippi. The former, or older, is characterized by flexed burials, cores for projectile points, grooved ax, banner stones, grit-tempered pottery, etc. The Mississippi, which precedes the proto-historic period, is identified by extended burials, flakes as

projectile points, celts, chunky stones, shell and copper ornaments, shell or bone-tempered pottery, platform pipe, etc. Among the well-known sites belonging to this horizon are Fort Ancient, Adena, and Madisonville mounds, Ohio; Fox Farm, Kentucky, and Etowah, Georgia. The Woodland horizon is illustrated by the Hopewell mounds in Ohio and mounds in Fulton County, Illinois. The Mississippi and Woodland horizons are thought to extend northward into Wisconsin, westward into Iowa, and eastward into New York (p. 312).

6. *The Plains.* This area includes the terrain known to geographers and geologists as the dry plains, an elongated area extending from southwestern Texas into Canada. For convenience, we have included in it parts of the dry plateaus of Nevada, Utah, and Idaho, but eventually these marginal stretches may be apportioned to surrounding archæological areas. Directing our attention to the dry plains, it appears that extensive surface surveys have been made within the bounds of Wyoming, Nebraska, Colorado, Texas, New Mexico, and Oklahoma. The historic tribes formerly ranging here were bison-hunting horse users. Since their basic economic pattern conformed to such a mode of life, the expectation is that archæological materials will be found thinly scattered. The surveys of Renaud in Colorado¹⁸ and Wyoming are confirmatory: true village sites are wanting; campsites and fireplaces are numerous; tipi rings and effigies in boulders, frequent; rock-shelters and caves rare; pictographs common; some low stone-walled enclosures (possibly defensive); stone cairns; a few large quarry sites; many workshops; occasional black pottery resembling Missouri River and Eastern types; work in stone, mostly chipped; a curious angle-tanged knife, etc. A few metates, scraps of corrugated pottery, and steatite vessels remind one of areas south and west.

North of Wyoming, extending to the Saskatchewan, we

lack good data, but the débris of buffalo pounds yields thousands of arrow-heads. In 1905 the writer examined a buried campsite near the United States boundary which was rich in bone and small obsidian arrow-points, but without pottery. According to local reports, pottery is occasionally found in the Canadian plains.

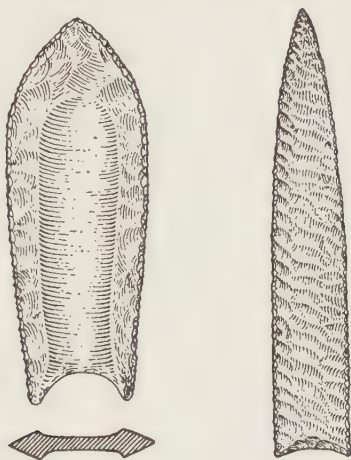


Fig. 65. Folsom and Yuma Points. After Roberts

However, this dry plains area appears to have been the home of a bison-hunting culture, too ancient to be detected in surface finds, except in spots where the wind is now carrying away sand and soil. The initial type site was at Folsom, New Mexico, but later other sites were found, ranging northward to the Black Hills.¹⁹ These sites are innocent of pottery and polished stone tools; even worked bone is rare. All are temporary campsites where apparently species of bison, now extinct, were hunted and killed. In a few sites additional Pleistocene fauna have been observed. The most characteristic artifact is the so-called Folsom point. While the next few years may reveal more important data, we have enough in hand to outline one of the

earliest New World cultures so far discovered. Further, it is a bison-hunting culture and in an area where there was a historic culture with a similar base. Whether these can be integrated to form a continuous culture sequence, the future must decide.

7. *The Pueblo Area.* In the states of Arizona and New Mexico centers the richest archæological province north of old Mexico. For years ruthless relic hunters have overrun it, turning over burial grounds and knocking down ruined walls in their search for marketable plunder, without exhausting the supply. Also a number of distinguished archæologists have spent the active years of their lives surveying groups of these remains, but notwithstanding all this, many problems remain to be solved.

The history of archæology in this area falls into two clearly defined periods: first, the search for new sites and artifact types; and second, the search for time sequence. The first was a task of exploration, probably the necessary initial step in any area. In time, it became evident that no part of the United States approached this region in archæological riches. To the joy of the relic hunter, burials, pottery, and ruins were numerous on every hand, but, fortunately for us, some serious students of archæology made a systematic survey of the area.

If we consider first the general geography of the area, the mere topography seems to segregate the ruins into four large groups: those of the Rio Grande drainage, the San Juan, the Little Colorado, and the Gila. These four river valleys contain by far the greater number of the known sites. By using these gross distinctions as points of departure, we can the more readily summarize the present state of the subject. The two distinguishing archæological characters here are architecture and ceramics. The most important types of buildings are the pit-house, slab-house, semi-subterranean house, rectangular house, pueblos, towers,

and the kiva. Descriptions of these are available in the literature on the area. Complicated systems of classification have been devised for the ceramics of the region,—understood by specialists only. In 1927 and 1929 conferences were held at Pecos, New Mexico, to standardize a classification technique and recently two institutions, Gila Pueblo and the Museum of Northern Arizona have extended the system.

Returning to architecture, we note that the surviving pueblo structures are merely accumulations of one-room houses and that those now occupied in the Rio Grande Valley do not differ in essentials from those in prehistoric ruins. Hence, it is clear that a large portion of these ruined houses belong to the antecedent culture of the historic Pueblo natives whose traits have been outlined in the preceding chapter. The culmination of this type seems to have been in the Rio Grande Valley, with outlying examples in the San Juan country. The essentials in groundplan are a bracket-like enclosure of articulated rooms, in the open court of which is a kiva, or ceremonial chamber. In fact, the presence of this kiva alone, because of its unique form and functions, would be sufficient justification for assuming such a connection. In the Little Colorado country and down the Rio Verde towards its junction with the Gila, we find again the three kinds of houses noted in the preceding localities: the cave-like dwelling in the rock, the true cliff house, and the larger pueblo pile of the open country. In addition, a semi-subterranean type of house has come to notice, reminding one vaguely of a type widely spread in Areas 6 and 9 (p. 114). The best known ruin is that of Casas Grandes, with its groundplan reminiscent of southern Mexico rather than the Rio Grande.²⁰

About 1912 Nelson developed a method for dating pottery styles which applied to the Rio Grande region, gave time distinctions and eventually resulted in the formula-

tion of five successive Pueblo periods, preceded by three Basket Maker periods, generally applicable to the Rio Grande and the San Juan regions. With certain modifications, this sequence seems to hold for the area as a whole. Since pottery is the key to such time relations, a new kind of survey was inaugurated, consisting in the location of sites and the collection of pottery fragments therefrom.²¹ These methods are discussed in the next chapter, but it suffices to state that the five Pueblo periods show a continuous development into the cultures of the contemporary pueblo dwellers. The time for great buildings was in the period known as Pueblo III, dating about 951-1350 A.D. (according to tree-ring dating, pp. 308-311).

After investigations in the San Juan and Rio Grande regions were well advanced, increased attention was given to Arizona and southwestern New Mexico. As has been suspected, this region presented certain characteristics of its own. The basin of the Gila in southwestern Arizona appears to have passed through a developmental sequence to which the name, Hohokam, has been given, assuming that the surviving Indians of the region are lineal descendants of the prehistoric inhabitants. It is difficult to prove this theory, but it may well be near the truth. In any case, there are evidences of continuity during prehistoric time. In southern Arizona another name, Mogollon, has been used to designate a type of pottery which seems to have influenced later Hohokam. The current theory is that Hohokam is older than Basket Maker III and was the carrier of agriculture and ceramics to the San Juan area; this awaits stratigraphic demonstration.

The foregoing time distinctions suggest new geographic horizons: a general agricultural, pottery-making culture of two patterns, a, one on the plateaus, including the San Juan, Rio Grande, and Little Colorado groups, and b, a desert culture centering on the Gila and extending over

most of Arizona and parts of New Mexico. The former may be called Basket Maker-Pueblo, the latter Hohokam,²² with a subdivision called Mogollon (Fig. 66).

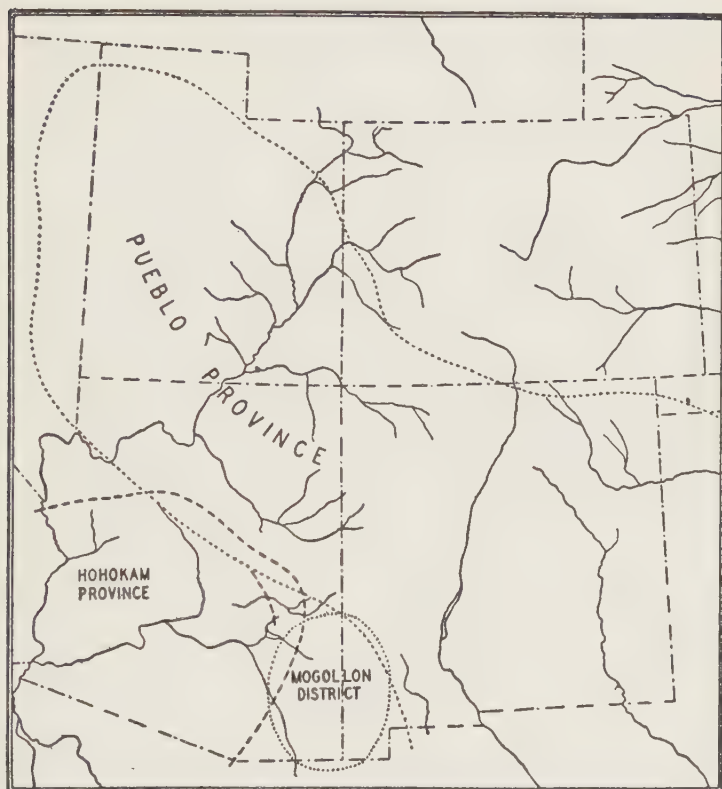


Fig. 66. Proposed Sub-culture Areas in Southwestern United States.
F. H. H. Roberts, 1936. I

8. *California Area.* As an archæological area, California presents uniformity rather than diversity. So far, important time distinctions have not been demonstrated. Though deep shell deposits have been sectioned, there is so little change in artifacts as one proceeds from the top to the bottom that one must regard California as a marginal

area little influenced by other cultures. Some of the refuse deposits are so deep that observers have been tempted to assume they represent many thousands of years, an astonishingly long sequence without marked culture change. What is more, the known archæology of California seems to pass directly into its ethnology.

Recalling that the historic cultures of the area (p. 227) seemed to have central and peripheral groupings, some local differences in archæology are to be expected. Thus, it is customary to speak of three archæological foci, Santa Barbara, San Francisco Bay, and Humboldt Bay. The similarities, in artifacts and other characteristics, between these foci are many, but there are some individualities. Perhaps Santa Barbara is the focus of the most unique artifacts, such as finely wrought bowls, boat-shaped vessels, baking slabs, and many problematic forms, all of steatite; many varieties of shell beads and pendants; shells inlaid in asphaltum; fine examples of edged tools; perforated ring-like stones reminding one of African digging-stick weights; and curious shell fish hooks, much like those from the Pacific Islands. The northwestern part of the area presents curious curved stone adze handles; a stone hammer with a broad base and a flanged head; pestles with pointed handles and flanges at their bases; and perforated net sinkers.

The artifacts from the central part of the area are far less unique; yet, we find here a curious plummet stone, met with, rarely if at all, in the north and the south. Some slight evidences of intrusion from the southwestern area are noted, particularly in inlay work. While in central California, the distribution of the typical artifacts is rather uniform, there are suggestions of local divergence, as around the city of Stockton, where small mounds have yielded a few unusual objects. Shell mounds are numerous on the coast, particularly around San Francisco Bay. So far as these have been investigated, they show essentially the same cul-

ture from top to bottom, though improvements in form and finish are in evidence.²³ Toward the southeast, we encounter traits, like pottery and the metate, intrusive from Area 7.

We return now to time sequence. Intensive excavations were made in each of the three sub-areas. In the south (Santa Barbara), the lowest strata reveal the use of asphaltum and steatite, which continues throughout. The one marked change is a tendency to use finer metates and more mortars. Yet, contrasted with these, are the lack of differences in patterns and style within each site. Sites in central California, and again in the north, show the same tendencies, producing evidence of a long uneventful culture history. In contrast to most other culture areas in the New World, the prehistoric inhabitants of each of these localities must have experienced a long peaceful career, never smashed by invaders, nor driven out by starvation. In any case, there is cultural unity throughout the area.

9. *The Columbia Basin.* This area comprises the greater part of the Columbia drainage, and a part of the Frazer Valley. Its archæology has been investigated in type localities by Harlan I. Smith,²⁴ who finds a fairly uniform culture throughout, characterized by the prevalence of chipped points and the rarity of those of ground stone; bone and antler digging-stick handles; bone tubes; arrow-shaft smoothers; hand hammers; pestles; summer lodge circles of stones; and semi-subterranean house pits. Yet over and above this similarity, two centers can be differentiated, one in the heart of British Columbia, the range of the Thompson Indians, and the other along the Columbia between the Willamette and the Snake rivers. The latter seems to be the seat of the most highly developed culture characterized by several unique artifacts, the so-called ape-head stone carvings, weight stones with suspension hoops, carved clubs, etc. Lewis²⁵ suggests that this exuberance of carving in

stone is due to the lack of suitable wood, since further down the river and along the coast, where wood is available, we find wood carving.

The Thompson country in British Columbia is not so unique but it is differentiated by the use of nephrite, sometimes called jade, a special form of stone scraper, etc.

Between these two centers, particularly in the Yakima Valley, Washington, is found a less intense culture having some of the peculiarities of the two flanking centers.

10. *North Pacific Coast Area.* Very little is known of the archæology here, except in the vicinity of Puget Sound, where the investigations of Smith²⁶ reveal an early historical connection with Area 9. As this locality is truly marginal to the area, we assume that the true center lies northward, since we find there some evidences of a culture directly antecedent to that of the historic tribes.

11. *The Arctic Area.* Arctic archæology scarcely existed at the opening of the century. True, Dall²⁷ reported certain observations before that time, but until Mathiassen and Birket-Smith excavated around Hudson Bay, these proposals came to naught. In the Hudson Bay region two horizons were recognized, the Eskimo known to history and the older Thule culture; the latter was characterized by crude pottery, bolas, bird harpoons, extensive use of whale bone, harpoons with open sockets, etc.

Later, in Alaska, Geist and Rainey²⁸ proposed a more extended sequence of at least six horizons, including the Thule of Hudson Bay: a, Old Bering Sea; b, Birnirk; c, Punuk; d, Thule; e, protohistoric; and f, modern. It is too soon to regard these tentative sequences as applicable to the whole area, but they are suggestive. Incidentally, we note that stylistic changes in harpoon heads are the main indices to time sequence, serving a function similar to that of potsherds in certain other areas. The data so far suggest that the oldest cultures are in Alaska, but since

this runs counter to ethnological opinion it may be a premature judgment. In closing, we note that, as in many other New World areas, there appears to be a continuous sequence marked by minor culture changes, the whole development following a pattern which we connect with the surviving Eskimo. Further, as in several other areas, art reached its highest level well back in prehistoric times.

12. *The Canadian Area.* By the mere process of elimination we have left the whole interior of Canada. Practically no archæological work has been done here except in the southern border, where, as may be anticipated, the cultures are marginal to those of the adjoining areas. The reports of missionaries and explorers lead us to suspect that it is the weakest archæological area on the continent.

13. *Northern Mexico.* In turning to the southern extension of the continent, we approach a difficult task. The problem is not only complex, but further complicated by the lack of definite knowledge. We have already sketched the cultures found here by the Spanish invaders, but an empirical grouping of the archæological artifacts gathered from this general region introduces an unknown chronological factor, which may give quite a different result from our previous grouping by historical data. Holmes proposes five archæological areas which we designate as follows: Northern Mexico, Central Mexico, State of Oaxaca, Yucatan, and Panama. Northern Mexico is still only partially known. For years the only recorded site was Casas Grandes in Chihuahua whence comes a somewhat unique type of pottery, suggesting that there was considerable local development in culture, but exhibiting more evidence of influence from the Pueblo area (7) than from Central Mexico to the south. To the west in Sonora and to the east of Chihuahua too few data are available to justify a summary.²⁹

14. *Central Mexico.* This was the seat of Nahuatl, or Aztec culture, and has been sufficiently characterized in the preceding chapter and in the section dealing with architecture. The best known part of this area is the restricted region about Mexico City, often designated as the Valley of Mexico. Archaeology ends with the arrival of Cortez, not necessarily, but because so far excavations have been directed to pre-Spanish sites. Since the Aztec régime was overthrown by Cortez, we have sufficient historical ethnological data to characterize the culture of that time (p. 244). It is usually assumed that the rise of Aztec power began about 1350 A.D. The earlier culture periods, so far as known, were: Copilco-Zacatenco, Cuicuilco-Ticomán, Toltec, and Chichimec, ranging from about 200 B.C. to 1350 A.D. Writing seems to have begun in the Chichimec period. True architecture begins with the Toltec, but the ceramics of the earlier cultures are well developed, especially in figurines representing humans. As in the Pueblo area (7), the results tend to shorten the theoretical time intervals, but otherwise the stratigraphic data are fairly consistent with the assumed historical dating. Neither ancient nor primitive cultures have, as yet, been found in the area.

15. *State of Oaxaca.* The most distinctive ruins in this area are those at Mitla, supposed to have been the center of Zapotec culture, and Monte Alban, which seems to be an older site. While at Mitla the roofs of buildings were of the flat beam-supported type, characteristic of Areas 14, 13, and 7, the stucco mosaics were of the Maya type (Area 16). On the other hand, Mitla takes the lead in stone masonry and, in fact, rises almost to the level of Peru, in that phase of architecture. Of particular interest is the discovery of the original quarries, with half-cut blocks, revealing all the essential details of the process. All this stone cutting was with stone tools, as was the case in Area

16. A unique architectural feature is a cross-shaped tomb.³⁰ The pottery is of good quality, but frequently unpainted.³¹

Monte Alban became famous in 1931 through the discovery of a tomb rich in gold ornaments, carved bone, etc., with inscriptions suggesting an intrusion of Mixtec culture, the main culture of the area being Zapotecan. In some respects this is one of the most promising archæological fields in Mexico.

16. *Yucatan*. This area covers the range of Maya culture whose characteristics have been outlined in the preceding chapter and under the head of architecture. The most impressive archæological remains are the great ruined cities, the best-known of which are shown on the accompanying map. The carved monuments, or stelæ, bear hieroglyphic inscriptions, many of which are dated. This characteristic makes them by far the most important antiquities in the New World, since it is from these alone that we get our safest idea of time perspective. The best known research projects in this area have been directed by the Carnegie Institution. The most extensive excavations have been at Chichen Itza, Yucatan. In British Honduras evidence has come to notice suggesting a long period of continuous occupation in which at least five culture levels are apparent, ranging in time from about 1 A.D. to 1400 A.D. Incidentally, the tendency of the Maya to enlarge their pyramidal temple structures by building the new over the old, presents a kind of stratification which gives a time sequence which may prove to have general validity for the Maya area as a whole.³²

17. *Panama*. In the main this area includes Panama, Costa Rica, and Nicaragua. Lothrop³³ distinguishes two main subdivisions: the Pacific (Western Nicaragua and Northern Costa Rica); the Highlands (Central and Southern Costa Rica with the Highlands of Panama). The Pacific subdivision may be characterized by large carved



Fig. 67. Ancient Maya Cities. Morley, 1915. I

stone slabs and statuettes; urn burials; the Nicoya type of pottery; polished celts; cylindrical pottery stamps; gold ornaments of Chiriqui type; most of the artifacts collected are from graves.³⁴

The Highland subdivision returns varieties of polychrome pottery related to the Nicoya type, tripod bases predominating; Chacmool statues chiefly of Chorotegan type; stone metates with animal legs, heads, and tails; fine stone idols. In general, the culture trend is southward toward Chiriqui. Although more data are needed to make its archæological position clear, the indications are that this area stands somewhat apart from the Maya on the north and the Andean culture on the south.

18. *The Antilles.* The leading problem in Antillean archæology will always be the continental affiliations of this insular culture. The available data are meager enough but still permit of some generalizations. According to Fewkes³⁵ the culture center of the area was Porto Rico and Haiti, which is also the approximate geographical center. The culture traits of the historic tribes have been outlined in the preceding chapter, where we saw that this was also the approximate center of culture when Columbus arrived upon the scene.

One of the most common objects in collections from the islands is a petal-shaped celt and its distribution is an index of the general culture distribution, for it is most abundant at the center designated above and relatively less frequent in the Bahamas and the Lesser Antilles. In the latter, it gives way to an ax with lateral notches and sometimes side grooves. Another trait of general distribution is found in a type of pictograph, closely resembling those of the South American mainland, both in essential style and in juxtaposition to waterfalls and water courses.

Of special archæological features, Porto Rico offers a fine series in her mysterious stone collars, numerous three-

pointed stone figures, elbow stones, and carved celts. Thus, in the main, we are justified in designating the Antilles as a distinct archæological area, belonging rather to South America than to the northern continent.

Rainey finds a new type of ceramics in Porto Rico, apparently earlier than the previously known types. This suggests an earlier occupation than previously assumed. Again, in Haiti, the same investigator discovered an early flint culture, something heretofore not credited to the area.⁸⁶ Finally, Rouse reports non-pottery-producing sites in Porto Rico, possibly the first culture to reach the island.

SOUTH AMERICA

No one has attempted a close classification of South American archæology but certain suggestions have been made. We have prepared a map upon which are located the areas indicated by our present knowledge. There are six of these: Colombia, Ecuador, Peru, Chile, Atlantic Highlands, and Patagonia. The interior of the tropical forest is a blank, for if it has any archæology, its discovery is for the future.

19. *Colombia and Venezuela.* The archæology of this area is little known and offers rich returns to the investigator. The absence of impressive stone buildings may have led to the neglect of the area as well as the failure to recognize its strategic importance. In Colombia, four culture centers have been recognized. In the north, one centers about Antioquia, the home of the Tamahi and Nutabi peoples; the next, to the south, about Cartago (the Quimbaya); the third, at Popayan (the Coconuco); and lastly, in the extreme south, was the seat of the Chibcha empire. Though at the time of the conquest the latter was the center of the highest political development, the leading culture was formerly, at least, at Cartago.

No ruins of buildings comparable to those of Peru have been noted; even the mound development is feeble. How-

ever, there is one unique locality about San Agustin, where remarkable monolithic statues and some mound structures have been found. Metal work was praiseworthy, especially at Cartago. Skilful casting by the *cire perdue* method has been noted, and good examples of soldering, plating, and even gilding have been collected. Different colored alloys were produced with gold, silver, and copper.

It is believed that different styles of pottery were produced in the various localities in Colombia, but the art is simpler than in Peru; polychrome decoration is rare. In many cases a curious wax, or batik decorative process, also known in Ecuador and Mexico, was used. Painted designs are in geometric patterns, but bold incised designs are more frequent. One striking feature is the tendency toward effigy vessels and vases with frogs, monkeys, etc., in relief, peeping over the brims. Highly engraved pottery spindle whorls are frequent; but quite distinctive are the cylindrical pottery stamps for printing cloth and for body painting. This may be considered as a form of roller printing. Emerald mines were worked. Colombian collections contain numerous stone tools, particularly ax blades, some of which are grooved. Mason³⁷ explored the Tairona district, reporting petroglyphs, paved stone paths, and circles of cut stone slabs. He found stone and bone artifacts, suggesting Venezuelan forms, but gold objects closely similar to those from Colombia in general.

If culture influences moved freely between North and South America, one of the routes should pass through Colombia, but we know too little of Colombian archæology to be definite. Lothrop and Eric Thompson³⁸ suspect that many Andean influences were relayed through Colombia, possibly certain pottery shapes, as cups with flaring bases, tetrapod bowls, as well as manioc, the hammock, urn burial, etc. However, all this remains to be demonstrated.

Less is known about the archæology of Venezuela. The

highland portion seems to have had culture affinities with Colombia. Unusually large stone mortars have been reported; ax blades are rectangular and triangular; pottery is not so highly developed, but bears incised decorations and figures in relief, not unlike vessels from Colombia; bone points and implements are abundant. Little can be said as to time relations in this area. Bennett and Kidder have demonstrated that the stratigraphic method can be used here. Bennett³⁹ reports a site at La Mata, Maracay, which seems to reveal a mound built over refuse belonging to a lake-dweller culture; the top of the mound is covered in turn by late village refuse. Whether the differences observed in these three strata represent distinct cultures or mere progressive changes in the career of a single people is not clear.

20. *Ecuador*. While Ecuador has some striking individualities, it nevertheless does show similarities to Peru on the one hand and to Colombia on the other. It is considered that in protohistoric time a certain unity prevailed over the whole territory between the present boundary of Peru in the south and the Rio Ancasmayu (Rio Patia) on the north, usually designated as the empire of Quito. The Inca conquered the country and so the archæologist finds therein many artifacts of Inca design. However, the archæology of Ecuador is not well known, but the data available suggest considerable variety and curious local developments. Two general subdivisions are recognized, the interior highland culture and that of the coast plain. Of the latter, Manabi is the most peculiar, with its stone chairs, carved slabs, pillars, and stone buildings, traits not found elsewhere.⁴⁰ Burial mounds are frequent on the coast and extend northward from Quito. Gold work is not so strongly developed as elsewhere, but there is a special development in the art of overlaying with gold leaf. This, as well as pottery, is more highly developed on the coast. The ceramic

types are highly ornamented spindle whorls; polychrome vessels are rare; incised designs are common, as are tripod bowls, cups with flaring bases, and elaboration of pottery adornos representing human heads and animals, etc.

Chronological distinctions are vague, but Means ⁴¹ suggests that the coast belt was the home of an ancient simple culture which changed gradually into something like Tiahuanaco. Manabi seems to belong to the coast type of culture. In the highlands a similar sequence from a simple culture to later developments showing Peruvian influence is suggested.

21. *Peru.* Under another head we outlined the culture of this area as of the protohistoric period. In prehistoric time three important culture centers came into existence: Nazca on the south coast, Chimu on the north coast, and Tiahuanaco in the Bolivian highlands. Nazca is best known for its fine polychrome pottery, in which yellow, black, and red predominate. Textiles are conspicuous. Chimu specialized in portrait jars of animal and plant forms and in pyramidal buildings. Late Chimu turned to black pottery, fine textiles, and bronze. However, these are specific centers of influence and so probably not sufficiently inclusive to give an adequate idea of the area as a whole. Tiahuanaco culture may be characterized by emphasis in stone work, low relief carvings and monolithic statues; the celebrated monolithic gateway at Calasasaya belongs here.

Chronological distinctions are still uncertain, but for Tiahuanaco ⁴² several horizons are discernible. For Nazca we have data suggesting that this culture is somewhat older than Chimu, but later both seem influenced by Tiahuanaco. Then followed, in the area as a whole, a period of local developments, eventually a decline, and finally, a period of homogeneity under Inca influence. This seems to mean that at least three original centers of culture, roughly contemporaneous, developed in as many localities.

When the Inca come into control of the whole area, certain tendencies to uniformity in art and technology are apparent, no doubt due to the shifting of population, the improved means of communication, and the direct legislation of the Inca government.⁴³

22. *Chile.* This region is frequently included in that of Peru, but the older underlying culture seems to have differed from that of the Inca period. There are solid historical grounds for considering the southern extension of Inca culture to be recent and so overlying the native cultures. In fact, the shell mounds of the long coast line indicate three periods of occupation. In the first of these, they were long-headed people with a rude culture, though they made some pottery. Later, came a round-headed people of much higher culture, somewhat like the older Peruvians. Later still, the Inca overran this area as far south as the Maule River. The pottery of the earlier periods is for the most part undecorated, metal work is not frequent, but usually of Inca patterns. On the whole, the interior elevated portions of Chile seem to have sheltered a higher culture than the coast.

In the north, it will be noted that the area reaches out through Bolivia into Argentine, where centers the unique Calchaqui, or Diaguite culture. Aside from its own peculiar problems, this culture is interesting in that it, like the Pueblo culture of the United States, is an extreme outpost of the New World highland culture. There are even some curious correspondences between the two, the significance of which is not clear.

Urn burial, so widely diffused in the Atlantic Highland area (23), turns up here in infant burial only. Thus, one of the most puzzling peculiarities of the Calchaqui culture is the great number of large decorated urns containing the remains of very young infants. Adult urn burial is found just north and east of Calchaqui in the edge of the Atlantic

Highland area. The designs have some vague resemblances to Marajo urns. Incidentally, we may note that urn burial of any kind is practically unknown in the Andean region. Other kinds of pottery are common in Calchaqui sites, some of which resemble the Nazca ware. The grooved ax also occurs here as in Ecuador. There are quite a number of original and unique articles, as the "knuckle-duster," a kind of hand dagger, and cup-shaped bells.⁴⁴

In northern Chile some chronological sequences are emerging, as Tiahuanaco, Atacameña, and Inca, though this order is tentative. Atacameña influence is observable in northern Argentine, apparently preceding Calchaqui and Inca.

23. *The Atlantic Highlands.* In this area we have included the whole coast from the mouth of the Orinoco to the La Plata, and a considerable portion of the interior. There are at least two general characteristics, that of urn burial throughout and, on the coast, extensive shell mounds. Most of these shell deposits are of human origin. On the north coast they contain objects suggesting the culture of the Antilles,⁴⁵ but from near the Amazon down, they seem to have a character of their own. That they contain pottery is not certain, the indications being that where found pottery is intrusive from the surface and later urn burials. Highly finished stone axes and other objects are common, and among the bones no suggestions of cannibalism are seen. In the vicinity of Santa Catharina, Brazil, there are finely wrought stone mortars in animal forms, and unique small point-like objects.⁴⁶

Outside the shell mounds and inland, the most striking objects come from Marajo Island and the territory surrounding the lower Amazon. A special feature is the engraved decoration reinforced with color, and a very unique object is the *tanga*, or pottery fig leaf.

Urn burial is highly characteristic of the Amazon Basin

and extends far to the south, though its intensity declines as we leave the Amazon in either direction. Taking the artifacts as a whole, two rather clearly marked subdivisions of the area are suggested, the one centering around Marajo and the other in southern Brazil, but taken in its entirety, it is essentially an area of simple culture in contrast to those we have just considered.

24. *Patagonia.* In this area is included all the territory east of the Andes from Cape Horn up into the Pampas and the lower insular part of Chile. Its archæology is very simple and suggests that it has always been the home of a simple hunting and fisher folk. The shell mounds continue along the coast on both sides, so that we have a continuous chain from the Orinoco around to Peru. No doubt the systematic investigation of these in the future will yield results of great value.

Considerable attention has been given to the archæology of this region, both of the coast and the interior, and certain claims to antiquity made which we shall consider elsewhere. Two types of implements have been distinguished, an older chipped type and later polished implements, but this chronological relation is not certain. Some rude pottery has been found in parts of the area, particularly on the east coast, which has some resemblance to the pottery of eastern United States. Both the stone work and pottery of the Andean margin is of a higher order than in the east. One of the distinguishing objects found throughout the open plains of the area is the stone bolas. Two other artifacts of an index value are the plano-convex flaked knife and the duck-bill scraper.⁴⁷

ARCHÆOLOGICAL AREAS

We have presented a brief inventory of archæological research in the New World, observing that regional characters have been in evidence from the first, but since the

final determination of regions rests in a more complete knowledge of geographical distribution, no precise boundaries can be drawn at present. Nevertheless, because regional differences are so obvious, it is necessary that we have in mind the rough locations for such boundaries. Comparing Fig. 58 (living tribes) and Fig. 61 (archæological areas) some correspondences are to be seen, suggesting that the two distributions belong to the same phenomena, the living cultures being but a contemporary cross-section of time perspective in the history of man in the New World. If we select any one of the moderately known regions, the data for the past and the present suggest that from time to time tribes came into it, expanded, developed to a fuller life, declined, etc. Assuming that archæology has not yet reached the period of its own decline, we may expect that a considerable part of this prehistorical snarl will be untangled in the near future.

At the outset we called attention to the need for classification in dealing with ethnological and archæological materials. No one has ever gone far without feeling the necessity for this, but it takes time to find a satisfactory basis for scientific classification. In setting up the areas for culture (Chapter XIV) we grouped tribes or communities according to more or less common traits. This is classification by similarities. It so happened that tribes having many traits in common tended to cluster, and since all communities live on the surface of the earth, the habitat of a cluster could be defined in geographical terms. Culture area is a name for such a cluster of communities. In determining archæological areas, the procedure was to note the geographical distribution of artifacts, or to classify localized archæological collections according to the artifacts they had in common. As in the case of living tribes, closely similar archæological collections tend to cluster in a region or an area. So when we say, *culture area*, we mean merely that

a boundary has been set up in terms of culture similarities, not primarily in terms of geography.

Every serious student in this field has wished for a standardized classification and many have offered suggestions. These proposals seem to fall into two classes, as implied above: a, those dealing with artifacts and therefore based upon materials, forms, and uses (known or assumed); b, those based upon the concept of community cultures, grouped by similarities among their trait-complexes. In neither case has any one scheme of classification come into general use, but, for a few areas, something which may, in the end, prove useful in some parts of the New World has been achieved.

The first intensive classification of artifacts was developed in Arizona and New Mexico where time sequences for relatively short intervals were achieved by the classification of pottery fragments. There are several steps in this sequencing process, as, collecting random samples of potsherds from the surface of all or most of the sites in a region; their classification, chiefly according to stylistic features; the tabulation by class of the number of sherds found at each site; and the search for stratigraphic relations in refuse heaps. Once the classes of potsherds are determined, each class can be traced from site to site until its full geographical range is determined. The area for each class will then be known and the chances are that these areas will show considerable overlapping, thus roughly defining an archæological area. If then, some refuse heaps are sectioned, revealing these classes of potsherds in sequence, the respective sites can be arranged in a chronological series.

Similar procedures are followed in Mexico and Peru. In eastern United States the method has not been so fruitful, possibly because pottery is less abundant; but Cole and Deuel find even simple pottery the most promising index to time

sequence in Illinois.⁴⁸ Further, as between Arizona, Mexico, and Peru, it was found necessary to vary the procedure in so far as the cultures involved were different. In other words, any workable system for the classification of pottery is likely to be peculiar to the cultures of the regions involved.

Archæologists working in the Mississippi drainage have proposed a scheme of classification based not only on pottery, but upon the associated artifacts found in the excavation of dwelling sites. The underlying concept is based upon living cultures, the former presence of which and their several individualities are indicated by the artifacts. The associated artifacts from a site are looked upon as indicating the presence of a culture, sufficiently described by enumerating the constituent artifact types. The associated artifacts in an archæological site present a partial outline of the culture once functioning there, whereas, for a living culture, a much fuller artifact and trait outline can be used in classification. Nevertheless, archæological complexes can serve as a basis for the classification of extinct cultures and the determination of their habitats. The proposed scheme for the Mississippi drainage seeks to identify, name, and eventually classify the extinct culture communities once ranging in that area. The classification is by categories of similarity.⁴⁹

PROPOSED ARCHÆOLOGICAL CLASSIFICATION

- Component: Associated complexes of contemporary artifacts found at a village or campsite.
- Focus: A group of components which approach identity in the dominant types of artifacts.
- Aspect: A group of foci with important similarities.
- Phase: A group of aspects with fundamental similarities.
- Pattern: A few artifact types, widely distributed, found common to a large number of components.

There are several implications in this scheme. The realities are the components. The significance of *focus* is clear

enough, for components often fall into local groups approximating identity in many artifacts. It is when we turn to *aspect* that our feet begin to leave the ground; here a judgment must be formed as to three or more grades of artifact similarity between foci, and the standardization of these distinctions will probably be far from satisfactory to even a majority of archæologists. Finally, this classification has evolved in the archæology of the Upper Mississippi drainage, so its wide application remains to be demonstrated. What has been suggested are five terms which are now appearing in the literature without standard definitions in books of reference.

The champions of the above classification scheme have explicitly stated that neither chronology nor geography have a place in it. We have noted that chronology is one of the all-pervading objectives in contemporary archæology and that geographical distribution shows a tendency to be with us always; so it may be well to consider in what way the proposed classification integrates with these concepts. Parker and his associates have announced a tentative sequence chart for New York State (p. 301). This classification includes components, falling within historic as well as prehistoric time, and the implication is that certain concepts of historic cultures are the fundamentals in this classification. For example, historic village sites of the Seneca are taken as components, and since certain prehistoric sites are so similar in artifacts that they can be identified as Seneca components, the entire group of historic and prehistoric sites can qualify as a focus. In the same way, other foci come to light, as Erie, Neutral, etc. Then, all these foci, having something in common, are considered a group of a higher order and so elevated to an aspect called Iroquois, and so on. In the table the classification of certain components into groups of foci, under a single aspect, is projected horizontally or in a unit of time. Yet the

Classification of Aboriginal Cultures of New York State

BASE	PATTERN	PHASE	ASPECT (Period)	FOCUS (Phase)	COMPONENT (Site)
—	Mississippi	Upper	Iroquois (Iroquois)	{ Huron Neutral Erie Seneca Cayuga Onondaga Oneida Mohawk Tuscarora Andaste	
—	—	Hopewellian	Elemental (Mound Intrusion)	New York	Squawkie Hill
				Castle Creek	{ Castle Creek Bainbridge
			{ Owasco (Third Algonkin)		{ Owasco Lake Levanna Canandaigua
				Canandaigua (Owasco)	{ Hilltop Wilbur Lake White's Pond Willow Point
—	Woodland	North-eastern			
				Pt. Peninsula	{ Pt. Peninsula Long Point Northrop Durkee Wray
			{ Vine Valley (Second Algonkin)	Middlesex (Vine Valley)	{ Vine Valley Palatine Bridge Hoffmans
				Coastal	{ Sites on Long Island, etc.
				Orient	{ Sites on Eastern Long Island, etc.
—	—	Ground Slate	(Eskimo-like)	—	—
—	Archaic	—	(Archaic Algonkin)	Lamoka	{ Lamoka Lake Geneva Scottsville

table as a whole is chronological, since the components can be listed under six units of sequence. One significant feature of this attempt in classification for New York State archæology is that it begins with historic cultures and works backward in sequence to successive aspects and, eventually, to a sequence in patterns. Since chronology is necessary in New World anthropology, it seems advisable to use a classification which will pass naturally from prehistoric to historic cultures. That the proposed classification can be made to function in this way is suggested by the table for New York cultures (p. 301).

We turn again to the classification of living communities as in Chapter XIV. The areas were determined by classifying tribes according to similarities in artifacts and customs. The procedure was about the same as in the proposed archæological classification. The grouping of the tribes is arbitrarily determined as in the archæological classification. We could use the same terminology for the areas designated in Chapter XIV. Components would be camps, bands, or villages; foci would be tribes, as usually designated, or similar culture groups; aspects, groups of closely similar tribes; phases, as in the Plains area (1), such grouping as typical tribes, Plateau variants, etc.; pattern, in Area 1, bison-horse culture. In Area 1 this classification would hold for the period 1800 to 1880. In other areas the period would vary, but each was conceived as a cross-section at a definite time.

As in the New York State classification there will be little difference of opinion as to focus, but the higher groupings will vary with the individuals making the judgment. There is no sufficient reason why, instead of the distinctions, aspect, phase, and pattern, one or more additional categories should not be set up; for the living cultures we have ever so many more artifacts and associated traits than archæology can produce, making a larger number of classes possible.

However, the classification we used with living cultures (Chapter XIV) is based upon similarities in traits and is therefore the same kind of classification as the archæologists propose. The culture areas defined in Chapter XIV were arrived at empirically, by checking similarities in the culture traits of tribal groups; in many areas the tribes were divided into two groups, the typical and the variant. Whether the areas as a whole are called phases or patterns will depend upon the individual making the classification. We prefer to regard the term culture area, as we have used it, as roughly equivalent to the proposed, pattern, of archæologists. Finally, if living cultures are to be classified, one can go farther than the archæologist by subdividing components, into families, sexes, age classes, and individuals. This suggests that in the classification of living communities as well as their archæological sites, the number of categories chosen will be wholly arbitrary, but if the schemes proposed are not made absurdities and do not lose sight of culture concepts derived from the study of the living, they may be useful. In America, archæology is so closely articulated with historic communities that a classification which goes beyond the technique of describing artifacts will be of doubtful value, unless it is applicable to living cultures as well. Further, the suggestion is, that no scheme of culture classification is likely to survive if it ignores time sequence and habitat.

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|---|---|
| 1. Holmes, 1914. I. | 8. Parker, 1916. II. |
| 2. Dixon, 1914. I; Skinner, 1909. I; Abbott, 1877. I. | 9. Willoughby, 1935. I. |
| 3. Moorehead, 1917. I. | 10. Thomas, 1889. I. |
| 4. Moorehead, 1913. I; 1916. I; 1922. I. | 11. Shetrone, 1930. I. |
| 5. Willoughby, 1935. I. | 12. Smith, H. I., 1910. II; Shetrone, 1919. I; Cole and Deuel, 1937. I. |
| 6. Harrington, 1909. I; Schrabisch, 1909. I. | 13. Shetrone, 1930. I. |
| 7. Nelson, N. C., 1918. I. | 14. Funkhouser and Webb, 1930. I. |
| | 15. Radin, 1911. I. |

16. Moorehead, 1917. I.
17. Strong, 1935. I.
18. Renaud, 1931. I; Strong, 1935. I.
19. Roberts, F. H. H., 1935. I; Kidder, 1924. I.
20. Kidder, 1924. I; Nelson, 1916. I.
21. Nelson, 1916. I.
22. Roberts, F. H. H., 1935. II; 1936. I; Gladwin, W. and H. S., 1935. I.
23. Nelson, N. C., 1909. I; 1910. I; Kroeber, 1936. I.
24. Smith, H. I., 1910. I.
25. Lewis, A. B., 1906. I.
26. Smith, H. I., 1907. I.
27. Dall, 1877. I.
28. Geist and Rainey, 1936. I; Rainey, 1936. II.
29. Holmes, 1914. I; Carey, 1931. I.
30. Saville, 1909. I.
31. Joyce, 1920. I.
32. Morley, 1915. I; 1920. I; Spinden, 1928. I; Morris, E. H., Charlot, and Morris, A. A., 1931. I.
33. Lothrop, 1926. I.
34. Hartman, 1901. I.
35. Fewkes, 1902. I; 1907. I; Lovén, 1935. I.
36. Rainey, 1935. I; 1936. I.
37. Mason, J. A., 1931. I.
38. Lothrop, 1926. I; Thompson, J. E., 1936. I.
39. Bennett, 1937. I.
40. Saville, 1907. I; 1910. I.
41. Means, 1931. I.
42. Bennett, 1934. I.
43. Squier, 1877. I; Means, 1931. I.
44. Boman, 1908. I; Joyce, 1912. I.
45. Im Thurn, 1883. I; Lovén, 1935. I.
46. Joyce, 1912. I.
47. Hrdlicka, 1912. I.
48. Cole and Deuel, 1937. I.
49. Cole and Deuel, 1937. I.

CHAPTER XVI

CHRONOLOGY OF CULTURES

DURING the foregoing discussions, it may have occurred to the reader that a culture classification according to geography is horizontal in the sense that it ignores time sequence, which is, for convenience, regarded as a vertical dimension. To complete the analogy, we conceive of culture as existent in three dimensional space, length and breadth constituting geographical distribution, and time sequence, the third dimension. When we dealt with living cultures they were conceived of as having only horizontal dimensions, a culture area being the geographical range of the important contemporary traits. So long as archæology dealt with surface surveys, it also ignored the third dimension, or time sequence, its problem being to classify and note the horizontal distributions of artifacts. We have seen that a surface survey is the first procedure in a new area, but the second step is a search for time sequence. It is this chronological relation which underlies the great classifications in Old World archæology, especially that triumph of synthetic research in Europe, the determination of the sequential relations between the several epochs in Palæolithic and Neolithic cultures. In this volume we have given most attention to geographical distribution, because this is the chief content of anthropology which is so new a science that it has had barely more than time to get even once around the distribution problem; but now that a provisional general view has been attained, interest centers upon the time relations between the respective types of culture.

Indeed, time perspective, or chronology, is just as essen-

tial to the comprehension of culture and man as is the third dimension to space. Geology, for example, did not become a science until it established a time sequence by empirical methods. In like manner, the future status of anthropology depends upon the establishment of a chronology for man and his culture, based upon objective verifiable data. Progress in this direction will go hand in hand with the development of adequate techniques. So far, chronological relations may be inferred from the interpretation of at least three classes of data. These are, respectively, stratification, the facts of distribution, and finally, documented data. The last of these we know as history. For each of these classes of data there are appropriate techniques.

STRATIGRAPHY

Wind and water are the chief agencies in the accumulation of stratified deposits. The geologists and palæontologists use such strata as time markers. Man strews ashes, charcoal, bones, and artifacts around his fireplaces. However, long residence at the same spot is necessary if a respectable depth of *débris* is to accumulate, and, if stratified deposits are to result, there must be periods of such residence, interrupted by other periods of non-occupation.

Some good examples of such stratification are found in the published reports of excavators. Thus, Harrington¹ excavated a rock-shelter near New York City, which was occupied for a time, then abandoned, while a layer of sand accumulated over the top of the *débris*; eventually Indians moved in again, but the second time, they used pottery. Nelson² studied a large shell-heap in Florida which showed the following sequence, beginning at the bottom: no pottery, plain pottery, and ornamented pottery. Intervening bands of soil were observed, apparently marking old surfaces, when the site was unoccupied for a long time.

On St. Lawrence Island in Bering Sea, Geist ³ worked in a large deposit of Eskimo refuse, stratified by sod lines. In Porto Rico, below the shell-heaps, Rainey found a layer of sterile earth, and underneath that, a culture with a different type of pottery. Another special case of natural stratification was discovered near Flagstaff, Arizona, where a deep fall of volcanic ash covered a large area, wiping out all the prehistoric inhabitants. Later, people lived on top of the ash. There is thus a definite break or physical stratum between the two periods of occupation. By the tree-ring method the date for this eruption is set at approximately 885 A.D.⁴ Finally, a site at Trenton, New Jersey, revealed pottery-using Indians in the top black soil below which was a thick layer of yellow sand, containing human bones and stone artifacts, but no pottery.⁵

Yet, such examples of true stratification are rare, the usual find being an unstratified deposit, or dump, revealing a period of uninterrupted accumulation. Even such deposits are none too numerous, but are found at their best in shell-heaps, rock-shelters, and caves. In such unstratified deposits the excavator now uses the method elaborated by Nelson,⁶ determining time sequence by the relative frequency of artifacts. In a refuse heap at San Cristobal, New Mexico, Nelson sunk a ten-foot shaft, removing the débris in layers one foot thick. The pottery fragments comprised seven types, or varieties, and were so distributed as to suggest the order of their appearance as, corrugated, biscuit, two and three color ware, two color glaze, and three color glaze. The concept underlying this procedure is one of progressive change; a new artifact or new style of ornamentation is invented, its production increases until it reaches its peak, then another new type may appear and increase in quantity until it displaces the former at its own peak, etc. These successive pulsations in styles define sequence horizons, which mark time periods in continuum. Deposits susceptible

of such treatment are more numerous than those naturally stratified, so this method is now the prevailing one.

DIRECT DATING

History enjoys a unique advantage in operating with documentary materials. Yet, there are other methods by which accurate dates can be determined, for human as well as natural events, to the enrichment of the historical record. One of the oldest methods is based upon the annual growth cycle of trees. A. E. Douglass made extensive use of such dating in his study of growth cycles for the great sequoias of California. He not only counted the rings to be seen in a cross section of the tree trunk, but measured the varying thicknesses.⁷ Assuming that the thickness of any given ring depends chiefly upon the amount of water available at the time, and that for a given year all the trees of the same species in the same locality will grow rings of approximately the same relative thickness, it is possible to match cross-sections from different trees. By matching the last years of older trees with the first years of younger trees, an extended series for a hypothetical tree of great age can be formed. Once such a series is known, any piece of wood of the same species can be dated by matching.

About 1914 the writer invited Douglass to study the annual growth rings in certain ceiling beams from the Pueblo Bonito and so-called Aztec ruins in northwestern New Mexico with a view to dating the trees from which they were cut. With this as a beginning, Douglass has been able to date many ruins, from the published lists of which we select those in the table on page 309.

The significance of all this is that a considerable part of the archæology of this area becomes history, the surviving ceiling beams taking the place of inscriptions in many Old World ruins. In many respects these beams can be dated with greater accuracy than inscriptions. However,

the method is applicable only where wood from suitable species of trees was utilized in building and where it is possible to match the beams in a series connecting with living trees of the same species in the same localities. The dates so far determined, apply chiefly to northern New Mexico and Arizona.

So far, the tree-ring method of direct dating is practical only for the Pueblo area, but its possible extension to other

DATES BETWEEN WHICH BEAMS WERE CUT AND USED
IN CERTAIN RUINS

	A.D.
Broken Flute Cave	354- 647
Red Rock Valley	630- 674
Allantown, Arizona	845- 918
Walnut Canyon	888-1094
Bonito	919-1130
Mesa Verde	1073-1262
Spruce Tree House	1254-1274
Oraibi, Hopi	1370-1937

regions is recognized. In Southeastern United States, where logs have been preserved in swamps, it may be possible to date charred wood from house sites, but even if the application of the method is limited to the Southwest, its importance should not be minimized in reconstructing the history of pre-Columbian time.

Geologists use a similar method for dating certain river valleys and the climatic changes following the last glaciation, using banded clays, the lines in which are formed annually; but the dating of terraces by this method has, so far, been related neither to man nor his artifacts. Occasionally, artifacts in caves are found embedded in travertine and stalagmite formations. Since these are laminated according to the seasonal drip, the suggestion has been offered that stalagmites can also be dated. The initial attempt was with a large stalagmite from Jacob's Cavern,⁸ Missouri. The growing period for this stalagmite extended over sev-

eral thousand years and embedded in it were ashes, bits of bone, and an occasional chipped artifact. Allison, who investigated this stalagmite, estimated that its growing period was from 1308 B.C. to 1892, when it was moved from its original position. He concluded that the cave was intermittently occupied by man during this entire period. However, this is an initial experiment and the results cannot be evaluated until more work is done.

ESTABLISHED CHRONOLOGIES

The literature for most archæological areas suggests something in the way of chronologies, but we record here a few examples of well-formulated culture sequences.

The chronology for the Basket Maker-Pueblo cultures was first developed in the Rio Grande area and gradually modified until it applies fairly well to the entire San Juan drainage and even to parts of the Little Colorado and Gila basins. The usual terminology and the proposed tree-ring dates are given in the table.⁹ Later, a group of investigators in Globe, Arizona, began an intensive study of the region, eventually to be designated as the home of the Hohokam or the Desert Culture.¹⁰ The chronology and tree-ring dates proposed for this culture are given in the table (see p. 311).

One of the first serious attempts to work out an empirical time sequence by the stratigraphic method resulted eventually in the accompanying formulation for New York State, proposed by A. C. Parker and his associates (p. 301).¹¹ The culture sequences are generalized under the heading, Aspect, and as such, apply to New York State only. Under the heading, Pattern, certain correlations are made with horizons believed to hold for larger areas, ranging from the Missouri to Cape Cod, one suggestion being that the Iroquoian development began on a horizon common to the Upper Mis-

Mississippi country. The other implications of the table are obvious.

Sequence concepts for the whole Upper Mississippi region are now taking form, so in the near future we may expect a generalized chronology for the whole, but in the meantime, noting that Parker's table is for the extreme eastern margin of the region, we cite a scheme for Nebraska on

BASKET MAKER-PUEBLO CHRONOLOGY

	A.D.
Pueblo V	1700-1900
Pueblo IV	1300-1700
Pueblo III	1100-1300
Pueblo II	900-1100
Pueblo I	700- 900
Basket Maker III	? - 700

HOHOKAM CHRONOLOGY

	A.D.
Modern	1700-1900
Recent	1500-1700
Classic	1200-1500
Sedentary	900-1200
Colonial	? - 900

the extreme western margin.¹² The original tables are too extensive for reproduction, but Strong distinguishes three horizons: 1, Great Plains; 2, Woodland; 3, Mississippi. The second and third seem to correlate with corresponding designations in Parker's table.

In Illinois, archæologists¹³ have proposed several culture horizons, in ascending order: Black Sand, Red Ocher, Hopewell Variant, Central Basin, Woodland, Middle Mississippi, and Historical Cultures. The reader may note that some of these terms correspond to those used for New York State (p. 301); eventually, they may prove equivalent, thus defining a series of successive culture areas for eastern United States.

In prehistoric Europe the appearance of pottery marks an

important time level in culture history. In North America, for instance, the problem is complicated by the apparent absence of pottery from the Pacific Coast belt and its uncertain distribution over central Canada. Yet, in the United States, east of the Rocky Mountains, the presence or absence of pottery promises to define a culture horizon, or at least a sequence horizon. Stratified evidences for early cultures without pottery are on record for Florida, New York, New Jersey, Kentucky, Nebraska, New Mexico, and Arizona. In these instances, pottery appears chiefly as an addition to a relatively continuous development, suggesting the diffusion of a new craft rather than invasions by pottery makers. In Kentucky the intrusion of pottery seems to have been from the south. So we are justified in assuming a non-pottery horizon. Accepting the terminology used by Cole and Deuel,¹⁴ the following tentative horizons may be expected in North America, east of the Rocky Mountains.

4. Recent and historic
3. Mississippi
2. Woodland
1. Pre-pottery

Eskimo archæological chronologies have been mentioned (p. 284), but aside from local sequences, most investigators recognize two horizons, the protohistoric and the prehistoric Thule. In Alaska, a number of pre-Thule horizons have been found in several localities, suggesting that Thule may be one of several phases in Eskimo culture history.

We next turn to Mexico and Middle America for which we recognize a dated or historical chronology (p. 313), but, in addition, an empirical stratigraphical sequence which can be roughly integrated with the historic chronology. Thus in the Valley of Mexico, Vaillant¹⁵ has carried on excavation for several years, producing a chronology which may be summarized as in the accompanying table. This chronology was arrived at by combining archæological and historical

methods of dating. The earliest dates are estimates based on a study of the nature of deposits and the periodic remodeling of temples.

MEXICAN CHRONOLOGY

	A.D.
Aztec	1350-1520
Chichimec	1100-1350
Toltec	700-1100
Cuicuilco-Ticomán	400- 700
Copilco-Zacatenco	200 B.C.-400 A.D.

In the Andean region, South America, no general sequences can be given at present. As in North America, comprehensive sequences must first be worked out for restricted areas. Even for so definite an area as Peru-Bolivia there are at present (1937) only three local incomplete sequences; yet, these are important steps in the final integration which should result in a satisfactory chronology. Significant stratigraphic advances have been made in the Antilles, Venezuela, and California, all of which promises that soon the student of New World prehistory will have data in hand for the first comprehensive New World chronology.

In two cases north of the Straits of Magellan, Chile, Bird found a sequence of cultures: 1, the oldest characterized by bones of the ground sloth and the late Pleistocene horse, stemmed stone points, and neither bow nor end scrapers; 2, bone points take the place of stone points; 3, small bolas, stemless stone points, hafted end scrapers; 4, the bow appears for the first time, stemmed stone points, large bolas; 5, culture similar to the Ona now farther south; 6, the historic Tehuelche.

The foregoing are the best examples of stratigraphic research in the regions for which we possess respectable chronologies. Partial and tentative sequences are known for several culture areas in the United States and Canada; most of these have been cited in the preceding pages. Two

generalized culture horizons, known as Woodland and Mississippi, respectively, are believed to cover most of North America east of the Dry Plains. According to Cole and Deuel,¹⁶ some of the outstanding characteristics of these horizons are:—

Mississippi: extended burials, mortuary objects present, flakes as projectile points, celts, chunky stones, shell and copper ornaments, bone and shell tempered pottery, etc.

Woodland: flexed burials, mortuary objects rare, cores for projectile points, grooved ax, banner stones and similar forms, grit tempered pottery with incised and impressed designs, etc.

In New York State Parker's second and third Algonkin seem to be Woodland, possibly including Willoughby's Old Algonkin. In Ohio, Hopewell is regarded as Woodland. The Mississippi horizon, in addition to certain sites in Illinois, seems to include sites of Fort Ancient culture in the Ohio Valley and certain Iroquoian sites in New York State, Georgia, and Wisconsin. In the main, cultures of the Woodland pattern are older than those of the Mississippi pattern, but their actual sequencing must be checked by data for restricted geographical units.

One general characteristic of culture sequences in the New World is the evidence for direct continuity from the initial occupation to post-Columbian time. Thus, in Alaska,¹⁷ six culture periods are reported, all Eskimoan; in California, there are deep shell deposits with continuous cultures; the same continuity is observable in the Puget Sound region and again in the Pueblo area, Peru, etc. This brings home to us the significance of regional development and that the integration of living culture areas with archæological areas is not only possible but in some cases now well on its way to realization, as in the case of the Eskimo, Algonkin, Pueblo, etc. The further significance of regional continuity is that in contrast to the Old World, the phenomena are

relatively recent; in most regions there has been only time enough for one scheme of development to run its natural course.

INFERENTIAL SEQUENCES

One method used for the dating of animal and plant species is sometimes spoken of as the age and area concept. Thus, a widely distributed species is assumed to be older than one of local range. This is too simply stated to be adequate, because in a far flung genera or family some species exist only on the margins of the distribution area. The assumption is made that these marginal forms are the older. Comparative ethnologists have often used this kind of interpretation, for example, when suggesting that the Ona and Yahgan of Patagonia are survivors of an ancient New World culture. Again, in archæological investigations in the Pueblo area of the United States it was observed that some of the older traits had the wider distribution. In the Rio Grande Valley of New Mexico, Nelson first determined the time relations of the prehistoric cultures by the method of superposition, only to find later that the same result might have been anticipated from an inspection of the surface of the area as a whole. We have seen how certain traits in a culture area seem to survive only on the margins. This relation is suggested when we consider the entire New World as a unit; our previous discussions have demonstrated that the more complex forms of culture are found in Mexico, Central America, and the northern Andes. Now it so happens that a few approximately identical traits are found on the immediate borders of this great central area, among the historic peoples of the United States on the one hand, and among those of Chile and Argentine on the other. Further, these traits have not been noted for the intervening higher cultures. The tendency is to infer that these marginal traits represent the culture underlying the central cultures

and hence an older type.¹⁸ It seems probable that among the oldest traits of New World culture are the dog, the bow, the spear-thrower, the lip plug or labret, the simple firedrill, simple coil basketry, string twisting, and stone chipping. These are found either widely distributed or massed upon the margins of the New World. The tendency is to regard them as a part of the culture brought from the Old World with the earlier immigrant groups. This is how distribution may, on occasion, be interpreted in chronological terms. While every method can be over-rated, this one has distinctive merit and often lends itself to checking by stratigraphic and historical data.

Under the head of inferential chronologies we may include the more complicated logical methods used by a number of contemporary anthropologists. The theoretical demonstration of this method has been led by Sapir,¹⁹ while the best examples of its application are to be found in certain studies by Boas among the Eskimo,²⁰ Spinden in Maya art,²¹ Lowie in the societies of the Plains Indians,²² and Hatt in clothing.²³

Boas has used the method in a number of instances, but particularly in his discussions of Eskimo culture, as when he concludes that the most differentiating features of the Alaskan Eskimo are more recent than those common to most Eskimo cultures. The method is even more extensively applied by Thalbitzer,²⁴ who decides that the original home of the Eskimo was around Bering Sea, from which general center he traces the older and newer traits.

Hatt, a Danish student, has exhaustively studied skin clothing for both North America and Asia, distinguishing between very old surviving types and those of recent origin. He places the oldest origin center in northern Asia whence the basic clothing concepts seem to have been diffused.²⁵ In general, he finds two periods of diffusion over the arctic and sub-arctic areas of the world:—

1. The older culture: Marked by absence of snowshoes, its best representative being the Eskimo. It was essentially a seacoast culture.

2. The later culture: Marked by the snowshoe, the tipi tent, the moccasin, etc. It was an inland culture.

Spinden's searching analysis of Maya art ²⁶ is important both for the results attained and as an example of method. By objective comparison, the carvings on the monuments and walls of Maya ruins were placed in two groups that seemed to be sequential. Further, since these stelae, or monuments, are dated, it is relatively easy to designate the time relations of these groups, thus establishing art periods. From this as the point of departure, the entire art of the region is analyzed into its respective periods and norms are established for the identification of such additional examples as may be discovered. It is not clear how far this method can be trusted in localities where there is no dating system to serve as a check, but it promises well.

Of a different type is Lowie's historical analysis of societies among the various tribal groups in the Plains area.²⁷ The full reports available for practically all of the many Plains tribes make it obvious that one general system of societies was diffused throughout the area. By a detailed analysis of these data it is possible to demonstrate some of the older forms of these organizations, approximately where they originated, and the direction of their diffusion. Incidentally, former historical contacts were revealed for some tribes now rather widely separated.

Thus, we see, that by working backward from the historic period, or, as in the exceptional case of the Maya, from a fixed date, it is possible by these methods to separate the older elements of culture from those of relatively recent origin. Reviewing these typical studies, we observe that the general method is the same whether the subject be

art, industries, or social organization. In the main, the method is first to analyze the culture trait-complexes and then by comparative reasoning, arrange them in time sequences. Practically every skilled field-investigator in the New World faces problems of this sort; but the method is at its best only when we deal with traits having wide continuous distributions, for unless we can balance the trait variations in one group against those in a neighboring group, little can be expected. As a method, however, it has its limitations, particularly in its baffling complexity and its great dependence upon mere logic. What we need here is a more objective technique, such as in superposition and relative distribution.

The studies of aboriginal food plants by Russian botanists offer new hints for time distinction.²⁸ Applying genetic principles to the related wild plants and noting species distributions, five or more regions are proposed as the probable origins of domestication:—

Colombia: flour corn, pearl popcorn, Peruvian cotton, arracacha

Eastern Brazil: manioc, peanut

Northern Chile: Irish potato

Central America: flint corn, kidney bean, lima bean, tepari bean

Central Mexico: dent corn, rice popcorn, upland cotton

The genetic and distribution studies so far made suggest some chronological distinctions; thus flour corn is believed to be the first maize domesticated, flint and dent coming later. This places the origin of maize in Colombia, but there the domestication of arracacha is regarded as still older, as possibly the first aboriginal agricultural venture. However, these suggestions are far from final, merely serving as hints of what may eventually give us another series of time sequences.

The general significance of the foregoing is that the origin

of agriculture is presented as a complex problem. The major centers of plant production in the New World lie in the area of intensive agriculture (Fig. 1), but these investigations of the geneticists indicate that more restricted localities, both within and without this area, are the places of origin for specific plants. Even well out on the margins of the two continental agricultural areas, plants were tamed, as manioc and peanuts in Brazil, the sunflower in the Ozarks, etc.

If the geographical distribution of pottery-making is considered, the area covered in North America coincides closely with the distribution of agriculture, suggesting that the two were contemporaneous. The existing chronological data bear this out, in the main, but in Arizona and New Mexico, maize seems to come in before pottery-making. In Kentucky there are also suggestions of maize preceding pottery.²⁹ However, the time difference is short. In Kentucky, Nebraska, and elsewhere sites and levels occur in which gourds and squash appear before maize. If the gourds used were cultivated, then, in Kentucky, as in Arizona and New Mexico, we have good evidence for a pre-pottery agricultural horizon. Thus, there may be some chance for the interpolation of a brief period characterized by agriculture without pottery. In broad terms, then, we propose three periods for the Eastern Maize area (Fig. 1): a, pre-agriculture; b, agriculture; and c, pottery.

We can go farther with the characterization of this pre-pottery agricultural period. The explorations of Webb and Funkhouser³⁰ in Kentucky, Dellinger and others in the Ozarks, indicates a complex of domesticated plants, among which were sunflower, marsh elder, pigweed, *Iva ciliata*, and the giant ragweed. These all produced edible seeds and most of them are still growing wild in these same areas. The possibility is that they represent spontaneous developments in agriculture among a population specializing in the

use of wild seeds. Naturally this gives us a new insight into aboriginal agriculture.

Aside from these more engaging problems there are opportunities for the study of trait origin by direct methods. Of these Mooney's study of the ghost dance religion³¹ is a fine example. In such cases the problem is, on the whole, directly historical, based upon documentary and personal testimony. It is to be regretted that more attention is not given to such historical problems because it is thus only that actual cases of culture movements may serve as check data in the development of inferential chronologies.

Returning now to the subject under consideration; viz., the relative time relations of traits of culture as revealed in their distributions, we see, in the first place, justification for the detailed consideration given that subject in the preceding pages and, in the second place, that the culture centers we thereby discovered are after all local developments which are, in turn, integral parts of a larger area with its super-center. Further this is consistent with the culture classification used by archæologists (p. 299).

Finally, all the foregoing approaches have their value. Even the best cases of stratification need checks such as can be found in geographical distribution and occasionally in documented or other dated materials.

HISTORICAL SEQUENCES

Documented material, or true history, begins in the sixteenth century, so that for many of the culture areas defined in Chapter XIV we can write a respectable history of culture change during white contact, as for example, the Iroquois of New York, the Indians of New England, of Southeastern United States, etc. Archæologists have shown how these documentary records may be supplemented by excavating in historic sites. However, in Mexico, Yucatan and Peru the Indians recorded something of their own his-

tory so that we are not limited to the sixteenth century. Of these, the data for Mexico and Yucatan are the most satisfactory. The Maya left behind them dated monuments using a highly original calendar system, but used by the Aztec and other literate Mexican peoples when the Spaniards came upon the scene. Though there is some difference of opinion as to how these calendars are to be interpreted the accompanying brief readings will give some idea of the age of Maya culture.

MAYA CHRONOLOGY

B.C.	
200	Approximate earliest date
A.D.	
50	Period of sculpture
600	Last of dated sculptures
960	Chankanputun destroyed by fire
1000	Triple alliance of Chichen Itza, Uxmal, and Mayapan, the period of architectural development
1200	Triple alliance broken by the ruler of Chichen Itza who was overcome by the ruler of Mayapan, aided by the Nahua. This is the period of Nahua influence
1450	Mayapan overthrown and destroyed and collapse of Maya culture
1517	First Spanish expedition to Yucatan ³²

Thus we see that fully two thousand years ago, Maya art had already reached a high level of development, implying more remote beginnings. No such series is available for Peruvian antiquities, but they may be as old, for all that. The history of the rise of the Inca is fairly well known, the succession of rulers being as follows:—

1. Rocca—about 1200 A.D.
2. Lloque Yupanqui
3. Mayta Capac
4. Capac Yupanqui
5. Sinchi Rocca
6. Yahuar Huacac Mayta Yupanqui
7. Huiracocha-Tupac Yupanqui
8. Tupac Yupanqui
9. Huaina Capac (Inti Cusi Hualpa)
10. Huascar Inti (Cusi Hualpa Yupanqui) ³³

The unfortunate Huascar was killed in civil war just as the Spaniards came upon the scene in 1532, but Markham produces records of a much longer list of ninety-two kings, which, if authentic, carry us back to about 1300 B.C. While the specific correctness of these early lists is improbable we should bear in mind that they are not impossible.

For the career of the Aztec in Mexico we have a respectable historical literature,³⁴ but because of lack of dated sculptures cannot establish so remote a chronology as for the Maya. The tabulated list gives us a few of the most important dates, though all those preceding 1325 A.D. are only crude approximations.

MEXICAN CHRONOLOGY

A.D.	
300(?)	Toltec cities founded, Tula, Teotihuacan, etc.
700(?)	Totonac settled in the State of Vera Cruz
1200(?)	Tarascan established a state in Michoacan
1325	Founding of Mexico City by the Aztec
1370	Tri-partite confederacy, Mexico, Tezcoco, and Tlacopan
1473	Tlatilulco subjected by Aztec
1487	The great temple of Mexico City built—famous for human sacrifices
1521	Cortez captures Mexico City

The list of Aztec rulers as given by Sahagun is as follows, the dates being approximate :—

<i>Name</i>	<i>Length of Rule</i>	<i>Probable Dates</i>
1. Acampich	21	1370-1391
2. Uitziliuitl	21	1391-1412
3. Chimalpopoca	10	1412-1422
4. Itzcoatzin	14	1422-1436
5. Moteuhçoma	30	1436-1466
6. Axayacatl	14	1466-1480
7. Ticocicatzin	4	1480-1484
8. Auitzotl	18	1484-1502
9. Moteuhçoma	19	1502-1521

The career of the Aztec rulers appears closely parallel, both in time and extent, to that of the Inca in Peru, but

both were later than the rise of the Maya. The similar dominance of the rulers of Bogota in Colombia should be noted, though historians have been less successful in projecting their chronology. The three examples we have given, therefore, exhaust the list of historical chronologies for the New World. Among the less cultured tribes there are a few feeble efforts to compile chronologies. The Kiowa and Dakota of the North American Plains have a kind of year count, but this covers little more than a century and so has no significance here. The celebrated Walum Olum of the Delaware Indians³⁵ gives us only the vaguest scraps of chronology, and little more can be said of the Popul Vuh manuscript for the Quiché of Guatemala and the annals of their neighbors, the Cakchiquel.³⁶ Hence, we must look chiefly to Mexico and Central America for historical chronologies. Here lies one of our most important problems, for our proper perspective of New World culture depends on its solution. In the main, all hinges upon our success in reading the inscriptions left by the Maya. Yet, in the meantime, we can feel certain that for the thousand years preceding the coming of Cortez we have in hand the outline of a history for the Maya and Aztec which, though strictly local, forms the hub of the historical wheel for the aboriginal New World as a whole.

THE ANTIQUITY OF MAN IN THE NEW WORLD

One of the interesting periods in a comprehensive chronology reaching backward to the discovery of the New World by stone age Asiatics passes under the title, antiquity of man in the New World. Since the culture sequences so far established do not reach backward more than two thousand years, the tendency has been to look for geological and palæontological evidence. So far, no one has succeeded in associating man with glaciation in the Mississippi Valley, nor, in fact, anywhere outside of the localities where glaciers still

exist. Hence, the tendency is to regard man as reaching the New World after the retreat of the ice into upper Canada. Again, the effort has been to associate the aboriginal Indians with extinct animals of the preceding geological period, the late Pleistocene, particularly with the extinct elephants, such as the mammoth and the mastodon. For a long time the results were unsatisfactory, but at Clovis, New Mexico, the positive association of artifacts with the mammoth was achieved. Thus the earlier finds of prehistoric elephant bones, associated with artifacts, are confirmed. Man did reach the New World before these great beasts became extinct.

The Folsom Cultures. On a high plateau, near the town of Folsom, New Mexico, is an archæological site of the first importance.³⁷ In 1925 chipped artifacts were found here associated with bones of an extinct bison, in such numbers as to be convincing. The Natural History Museum in Denver made the initial exploration of the site, and later, The American Museum of Natural History in New York, worked out the entire deposit. A specific type of chipped projectile point was found in association with the skeletons of a few bison, apparently all belonging to the same kill. Passing over a number of surface finds of similar projectile points, indicating a distribution of the specific Folsom type of point roughly coincidental with the Dry Plains of the United States, we note a site near Fort Collins, Colorado, known as the Lindenmeier site and excavated in 1934-1935, which yielded the same species of bison and types of projectile points as those from the Folsom site. Fortunately, the Lindenmeier site was more extensive, returning a few other types of artifact, all suggesting a hunting culture.

Near the town of Clovis, New Mexico, Edward B. Howard has worked sites at a lower altitude than Folsom, but at which he finds the same type of projectile points.³⁸ This site yielded the first definite association between artifacts and

the mammoth. Further, at the Lindenmeier site man was contemporaneous with the prehistoric bison and the camel.

The Yuma Site. At about the time the Folsom site came to notice, Mr. Anderson of Yuma, Colorado, observed a number of long, slender, finely chipped points, not of the Folsom type, but of an equally distinct and localized type.³⁹ Later on, points of the Yuma type were found elsewhere and occasionally seemingly in association with the Folsom type. Opinion is now shifting toward regarding the two types as roughly contemporaneous, though this is still controversial. Both types belong to the Dry Plains and seem to mark one of the early human horizons in the New World.

White River Sites in Nebraska and South Dakota. Barbour and Schultz in 1934-6, reported a number of artifact associations with extinct bison.⁴⁰ Some of the projectile points they found were of the Folsom type, some Yuman, and others still different. In the same river valley they observed a number of fireplaces beneath laminated deposits, suggesting antiquity, but until more work is carried on in that region the significance of these finds cannot be determined.

Other investigators have reported suggestive observations in localities upon the margins of the Dry Plains area, but the foregoing are the important sites.

Man and the Ground Sloth. Another important but less definite association with extinct fauna was observed at Gypsum Cave, near Las Vegas, Nevada.⁴¹ The extinct ground sloth once occupied this cave, as did man. That man and the ground sloth were contemporary residents was not clear, so all we can say at present is that such an association is probable. In the meantime, the archæologist, Junius Bird, found positive evidence of an association between man and the extinct sloth and the prehistoric horse in certain caves of southern Chile. So there is reason to expect that eventually this association will be established for North America.

Alaska. On the Campus of the University of Alaska is a site which yields the types of chipped implements characteristic of certain sites in the Gobi, Asia. The antiquity of these sites is still undetermined, but all indications point to a respectable age.⁴² At several localities in Alaska chipped implements have been found at great depth, in deposits containing late Pleistocene fauna. The probabilities are that eventually the same associations between man and extinct fauna will be established here as in the site at Clovis, New Mexico.

GENERAL COMMENT

Unfortunately, no human skeletons were found in association with Folsom artifacts, nor with any of the extinct fauna. All we can say at present is that some kind of men were living in what is now the area of the Dry Plains at a time when the mammoth, camel and the extinct forms of bison roamed there. Since the mammoth and the camel represent extinct mammalian lines in North America, this association is more promising as a time marker than the extinct bison, whose very near relatives still survive. These then stand for the extinct fauna of which these early New World men were a part. But new finds are now announced with such frequency that anything we say here is certain to be out of date soon. In the site at Clovis, the mammoth and camel are associated with the bones of the ground sloth, horse, antelope, and peccary, so one need not be surprised if these animals also are eventually associated with North American man. In southern Chile the extinct sloth and horse are associated with aboriginal man.

Turning now to the culture status of these earliest New World men, as suggested by the artifacts found at Folsom, Lindenmeier, Clovis, etc., we suspect a mode of life characterized by nomadism, stone chipping, use of fire, limited

use of bone, no pottery, and decoration almost absent. To quote Roberts :—

The implements found consist of characteristically fluted Folsom points, snub-nosed scrapers, side scrapers, end scrapers, a variety of cutting edges, drills, gravers, rough-flake knives, large blades and sandstone rubbing stones. Similar tools have been found at various surface sites, but this is the first evidence to demonstrate that they belonged to the Folsom complex. The artifacts show that the lithic component in the local cultural pattern was primarily a flake industry, only a few implements of the core type being found.⁴³

Hence, in so far as one can judge by stone and bone work these New World hunters were still about where we find late palæolithic and early neolithic man in Europe. Further, while the characters enumerated by Roberts are definitely associated with the Folsom and Lindenmeier sites, closely similar artifacts are found scattered far afield in the Missouri-Mississippi drainage, but not as yet in association with or linked to the artifacts constituting the local cultures. So far, this is consistent with the suggestion that there was a wide-flung, early hunting population in the continent. New evidence for or against this interpretation may be expected in the near future.

Everyone wants to know the probable date when these hunters killed bison at Folsom. The best we can do is to cite the estimates of geologists; these center around twelve thousand years. When more data are available these estimates will be revised upward or downward as the evidence warrants. We are still ignorant as to whether Folsom represents the culture horizon of the first invaders or merely one of several subsequent New World hunting horizons.

SUMMARY

In conclusion, we note that while for the Eskimo area (11), Iroquois area (3), Southwestern area (7), Central Mexico (14), Yucatan (16), the Antilles (18), Peru (21), and southern Chile (24), we have respectable chronologies,

these are still in their provisional stages. This is not to belittle the achievements in these areas and elsewhere. One need only consult the first edition of this book to realize the progress made during these twenty years. The future should record even swifter gains. One important problem now receiving attention is the integration of historic aboriginal cultures with the prehistoric. This has been done in the case of the Iroquois, where archæologists have worked in early historic sites of the Seneca, Mohawk, etc. (p. 000), thence in later sites. It thus becomes possible to combine the history, protohistory, and prehistory of these tribes in a single line of sequence. Similar attempts are under way in the Southwestern area, in Nebraska, the Southeastern area, and elsewhere. All this may be expected to end in a general New World chronology, though we are still far from this desirable goal.

Looking at the New World as a whole, the first guess would be that the greater part of the story lies in the Mexican-Andean region. As we have seen, the historical method carries us back to B.C. time in one part of this area, but no farther. So far, the acceptable evidences for antiquity, all post glacial, lie in the Dry Plains, ranging from northeastern New Mexico to Minnesota and the deep shell deposits of California. The outlying isolated finds suggesting antiquity are the University of Alaska site and certain caves along the Straits of Magellan, Chile. Possibly these reach back to the as yet undated infiltration period which initiated the peopling of the New World. Noting that the most satisfactory sequences have been determined by stylistic changes in ceramics, it is obvious that little can be done to set up time differences for non-ceramic cultures until substitutes for ceramic styles can be found. In Alaska, stylistic changes in ivory and bone carvings are promising, but for cultures limited to chipping stone, new methods of sequencing must be devised. However, it is fortunate that ceramics integrate

with historic time, thus holding out the possibility that ultimately in each archæological area the final sequences will pass from the living tribes continuously backward to the point where pottery first appears. This seems to be the goal contemporary archæologists have set for themselves, viz., to work out an empirical verifiable chronology for each major area beginning with the tribes living in the sixteenth century and working backward to the dawn of the ceramic art.

The discovery of the Folsom bison hunters and their contemporaries of the Dry Plains suggests an early spread of man over the New World from an Old World proto-palæolithic non-ceramic horizon. Perhaps the few chronologies we have cited rest on such a base, but, if so, they represent an interesting culture trend because they seem to reveal contemporaneous developments, or perhaps a single development in general. Anyway, the continuity and brevity of existing chronologies give them a striking similarity and whether or not largely independent in development, they show the same kind of growth cycles, and, for the most part, a single or complete cycle unit. Thus, in the Basket Maker-Pueblo chronology, the turning point was reached in Pueblo III, sometimes called the Great Period; in Alaska, Rainey observed that Eskimo culture had a prehistoric peak; in Peru, the highest culture level was reached before the Spanish occupation; in Nebraska, a Pawnee sequence has been proposed in which there is a Grand Period; there seems to have been a single cycle in the mound area; finally, in Middle America the Maya cycle is conspicuous. The rise and decline of human interest in specific culture objectives is a familiar event in history, but the significant point here is that aboriginal man was in the New World only long enough to run through one conspicuous full cycle of artistic ceramics, textiles, carving, sculpture, and architecture.

1. Harrington, 1909. I.
2. Nelson, 1918. I.
3. Geist and Rainey, 1936. I.
4. McGregor, 1935. I.
5. Volk, 1911. I.
6. Nelson, 1916. I.
7. Douglass, 1936. I.
8. Allison, 1926. I.
9. Douglass, 1936. I.
10. Gladwin, 1935. I.
11. Ritchie, 1936. I.
12. Strong, 1935. I.
13. Cole and Deuel, 1937. I.
14. Cole and Deuel, 1937. I.
15. Vaillant, 1936. I.
16. Cole and Deuel, 1937. I.
17. Geist and Rainey, 1936. I.
18. Nordenskiöld, 1918. I.
19. Sapir, 1916. I.
20. Boas, 1907. I.
21. Spinden, 1913. I.
22. Lowie, 1916. II.
23. Hatt, 1914. I; 1916. I.
24. Thalbitzer, 1914. I.
25. Hatt, 1914. I; 1916. I; Davidson, 1937. I.
26. Spinden, 1913. I.
27. Lowie, 1916. II.
28. Sauer, 1936. I.
29. Webb and Funkhouser, 1936. I.
30. Webb and Funkhouser, 1936. I.
31. Mooney, 1896. I.
32. Morley, 1915. I; 1920. I.
33. Markham, 1910. I, pp. 309-310.
34. Ramirez, 1885. I.
35. Brinton, 1885. I.
36. Brinton, 1885. II; 1890. I.
37. Roberts, F. H. H., 1935. I.
38. Roberts, F. H. H., 1936. II.
39. Cotter, 1937. I.
40. Roberts, F. H. H., 1935. I.
41. Harrington, 1933. I.
42. Nelson, 1937. I.
43. Roberts, F. H. H., 1936. II, p. 344.

CHAPTER XVII

LINGUISTIC CLASSIFICATION

WHILE, in the broadest sense, language is a trait of culture, its characters are so distinct as to require very different methods of investigation. The study of the different forms of speech in the Old World has become a separate learned pursuit and one in which the problems are so complex as to demand great specialization. The same is true of primitive languages in the New World, as well as in the less cultured parts of the Old. Consequently we have, under the head of New World linguistics, a fairly distinct division of our subject in which the most important investigations have been made by those who have specialized in it.

One of the first tasks in primitive linguistics is the classification of the existing forms of speech. The reader may need to be reminded that the national uniformity of language in Europe is a correlate of close political organization, one type of speech having been selected by the governing authority and its use perpetuated by enforced education. In the more primitive states of society, where political unity exists only for a single community and no legislative recognition of languages is taken, we may expect each such political unit to show some individuality in speech. In fact, so far as can be judged from the data at hand any separation of such a political unit into two or more parts will sooner or later result in different forms of speech.

Under such conditions, very unequal differences will exist. Between some groups we shall find but a small difference in vocabulary; in others, an additional phonetic change; and finally, variations in the grammatical structure. All degrees of these differences are found when we consider a very large

number of political units, giving us an intergradation analogous to that we observed in the cultures of the same units. This inequality of difference renders any classification more or less arbitrary. So long as the tongues of two or more groups do not diverge beyond the possibility of communication, they are usually considered as dialects, though the degrees of mutual intelligibility connoted by that term may vary greatly. When mutually unintelligible tongues are found to possess consistent similarities in vocabulary or grammatical structure, particularly the latter, they are said to be of the same family, or stock. Thus, all the languages of the New World may be placed in stock groups, the conception of a stock being a group of related languages with their dialectic subdivisions.

The determination of these stocks for the native tribes of the United States was initiated by Gallatin¹ in 1836 and brought to a definite form in 1891 by J. W. Powell,² who organized the Bureau of Ethnology at Washington. Powell is credited with the system of nomenclature now used for all the languages of the New World, which is to take some native unit name and give it the adjective termination *an*. Thus, Siouan stock is from the term Sioux, Caddoan from Caddo, etc. In the main, this system is still followed, though the clumsiness of the termination in some instances has led to modification.

Powell confined his classification to the tribes of the United States and Canada, which he grouped under fifty or more stocks and prepared a map showing their distribution. It is not too much to say that this classification and map are the very foundation of American anthropology. The work was so well done that very few changes have been made and as it was, in the main, based upon mere vocabularies, its excellence stands as a worthy memorial to Powell and his able associates. (See map, Fig. 68, and list of stocks for United States and Canada, pp. 391-400.)

So far, the Powell system is the only anthropological classification that is consistent, workable, and based upon genetic relationships. Further, while units of speech are classified by this system, these are coincident with tribal units. Thus, we say, the Arapaho are Algonquian; the Mandan, Siouan; the Cherokee, Iroquoian; etc. In other words, the various tribal entities are classified according to speech and this classification does tell us something of tribal origins and history. Yet, in this book, we are concerned with culture, another tribal character which we are forced to classify as best we can. So far attempts at culture classification have been less satisfactory than in case of speech, since we are still groping for a principle of culture descent. In other words, the grouping of tribes by cultures does not show much coincidence with groupings by language. Nevertheless, archæological and ethnological classification combined with time sequence, promises to emerge with a classification of cultures which can be interpreted in terms of culture descent. If these attempts succeed, culture families may emerge eventually.

However, in this chapter we are concerned with the classification of languages. The old conception of these New World families, or stocks, was that each stood alone, unrelated to others. This was puzzling. How could so many families originate without ancestral stocks? The probable answer is ignorance. Anyhow, as our knowledge of languages increased it was observed that families could be grouped according to similarities.

The first identification of language families was by comparing vocabularies. The word similarities thus noted were sufficient for the purpose, but in classifying families so defined, the structure or morphology of languages must be considered. Perhaps one should say that the comparative study of morphology reveals family similarities. As an example we cite the work of Dixon and Kroeber³ on Cali-

North America. For example, some linguists find that Natchez and Muskogean⁴ form a group; Tlingit, Haida, and Athapascan have been combined under the name, Na-Dene;⁵ possibly Beothuk, Wakashan, Salishan, and Kutenai belong with Algonquian;⁶ and finally, the Uto-Aztecans⁷ group includes Shoshonean, Nahuatl, Piman, Tanoan, Kiowan, Penutian,⁸ Mayan, Totonacan, and probably a number of others. There is nothing improbable about such grouping of the original families between which several degrees of similarity may be agreed upon and which, in turn, represent genetic relationships. Yet, until linguists accept these larger groupings and agree upon a scheme of class terminologies we must be content with the certainty that all languages and dialects within any one original family had a common origin. Hence, the moment we identify a language as belonging to a definite stock, we automatically assert its genetic relationship. In this sense, the accepted classification of man's linguistic character is superior to the present classification for his cultural characters.

To summarize, then, we observe that when languages are classified by the accepted methods, they fall into families or

List of Stocks for Fig. 68

- | | | |
|------------------|-----------------|----------------|
| 1. Algonquian | 20. Keresan | 39. Tanoan |
| 2. Athapascan | 21. Kiowan | 40. Timucuan |
| 3. Attacapan | 22. Klamath | 41. Tlingit |
| 4. Beothukan | 23. Kusan | 42. Tonkawa |
| 5. Caddoan | 24. Kutenai | 43. Tunican |
| 6. Chimakuan | 25. Maidu | 44. Uchean |
| 7. Chimarikan | 26. Moquelumnan | 45. Wailatpuan |
| 8. Chimmesyan | 27. Muskogean | 46. Wakashan |
| 9. Chinookan | 28. Piman | 47. Washoan |
| 10. Chitimachan | 29. Pomo | 48. Weitspekan |
| 11. Chumashan | 30. Quoratean | 49. Wintun |
| 12. Coahuiltecan | 31. Salinan | 50. Wishoskan |
| 13. Costanoan | 32. Salishan | 51. Yakona |
| 14. Eskimauan | 33. Shahaptin | 52. Yanan |
| 15. Esselenian | 34. Shastan | 53. Yokuts |
| 16. Haida | 35. Shoshonean | 54. Yukian |
| 17. Iroquoian | 36. Siouan | 55. Yuman |
| 18. Kalapooian | 37. Siuslaw | 56. Zufian |
| 19. Karankawa | 38. Takelma | |

stocks, in which genetic relationships are evident. If the reader prefers, this may be stated as revealing the history of development within the family. All the native languages in the United States and Canada have been identified, which is to say, there is no historic tribe within this territory whose linguistic family is unknown. For Mexico and Central America we cannot be sure, but it is improbable that more than two or three have been overlooked. In South America we are still less certain of the completeness of our knowledge. In the appendix we have tabulated the recognized families for these geographical divisions: for the United States and Canada there are fifty-six families;⁹ for Mexico and Central America,¹⁰ twenty-nine. For South America the old Chamberlain¹¹ list gives eighty-four. Distribution maps have been prepared, which we present in outline: Figs. 68, 69, and 70. Upon these, the families are designated by numerals which stand for the corresponding families in alphabetical order (see pp. 391-403). Finally, linguists have begun to classify these original families, thus forming larger groups, some of which seem to show genetic relationships.

COMPARATIVE PHONETICS

Linguistic studies fall into two rather distinct groups: phonetics and structure. Of these, phonetics is still quite undeveloped, the greater effort being placed upon structure, or word and sentence formation. Yet, some progress has been made in phonetics. For a time, attention was given only to the necessary practical ways of recording these new languages, each field-worker devising his own system. A certain initial uniformity was secured by the mechanical limitations of printing, but even this proved unsatisfactory. Recently the American Anthropological Association appointed a committee to formulate and standardize the methods of transcribing and printing.¹² The report of this committee is essentially a pioneer work on New World

phonetics, but no such practical system, however perfect, can take the place of independent phonetic investigation. A beginning has been made by Goddard who introduced the objective mechanical methods of phonetic analysis devised by European students, but as yet the whole subject is before us.¹³

In a very tentative way a few of the characteristics of North American phonetics have been suggested. Perhaps one of the most obvious differences from English, for example, is the small use made of the stress accent. Another peculiarity of American speech is a curious stopping of the breath before or after vowels, the mechanism for which is a closure of the glottis. Some of the native consonants have proved particularly difficult to European recorders. Among these are the stopped consonants, *b*, *d*, *g*, *k*, *p*, *q*, and *t*, which have many forms, but sometimes seem to stand between sonants and surds. These sounds are usually designated as intermediate stops. Again, there are glottalized forms resulting from a closure of the glottis and a quick release, giving an explosive sound not found in European speech. Yet the present enumeration of such assumed phonetic differences can serve no very good purpose, for until the study of New World phonetics comes into its own, we can not state what characters, if any, are peculiar to it.

In passing, note should be taken of a few pioneer regional surveys. In California, where we find a large number of different native languages, there appears to be a fair degree of phonetic uniformity.¹⁴ For one, the vowels tend to be open rather than closed and are given with a greater breath impulse than in European languages. The intermediate stops, just mentioned, are numerous and there is a strong tendency to use two *t*'s but on the other hand a single *k*.

In how far these phonetic traits are limited to California can not be stated, but such phonetic peculiarities as have been reported for the North Pacific Coast peoples suggest



Fig. 69. Linguistic Stocks in Mexico and Central America. Thomas and Swanton

some differences; for example, there is a somewhat unique voiceless *l* found all the way from Alaska to northern California, and along with it, in the main, a few fortis consonants. These suggest that a study of phonetic distribution will not only reveal some definite New World characters, but show localized geographical types as well.

In this connection we may remark that J. P. Harrington's pioneer work suggests two main phonetic systems for the United States and Canada, which because of their apparent geographical segregation may be designated as the Atlantic and Pacific types. The great nucleus of the Atlantic type is found in Algonkian and Eskimo speech. These suggestions should be noted for the grouping of Algonquian, Eskimoan, and a few minor stocks on one side, as against Athapaskan, Salishan, Shoshonean, and Siouan, on the other, leads one to feel that he is upon the threshold of a new insight into the origins of American stocks. Thus, it would appear that the Algonkin and Eskimo are survivors of the earlier linguistic strata of aboriginal man and therefore may in their blood and culture preserve something from this old heritage. Unfortunately, our specialists know so little of South American phonetics that this suggestive comparison cannot be carried further, for by analogy we may expect that somewhere in Brazil and Patagonia the Atlantic type will appear.

Again, from a different point of view, it appears that in phonetics, we have, perhaps more than anywhere else, an

List of Stocks for Fig. 69

- | | | |
|----------------|----------------|--------------------|
| 1. Athapaskan | 11. Lencan | 21. Tamaulipecan |
| 2. Chiapanecan | 12. Mayan | 22. Tarascan |
| 3. Chibchan | 13. Matagalpan | 23. Tequistlatecan |
| 4. Chinantecan | 14. Mosquitoan | 24. Totonacan |
| 5. Cunan | 15. Nahuatlán | 25. Ulvan |
| 6. Huavean | 16. Olivean | 26. Waicurian |
| 7. Janambrian | 17. Otomian | 27. Yuman |
| 8. Jicaquean | 18. Pakawan | 28. Zapotecan |
| 9. Jincan | 19. Payon | 29. Zoquean |
| 10. Laguneros | 20. Subtiaban | |



Fig. 70. Linguistic Stocks in South America. A. F. Chamberlain

instinctive formative culture factor and an organic basis for the unconscious modification of a trait, all of which leads into psychological problems of the very greatest importance to anthropology.

GEOGRAPHICAL GROUPING

If the geographical distribution of families is considered, their similarities show a tendency to cluster in regions. Dixon and Kroeber¹⁵ observed that when the families of languages in California are taken as a group they stand out in contrast to other North American groups. For example, Californian languages differ in the non-use of reduplication of the noun to indicate plurality, the method of incorporating the pronoun and even the noun into the verb, and, in contrast to these, the employment of syntactical cases, a

List of Stocks for Fig. 70

1. Alikulufan	29. Coconucan	57. Otomacan
2. Allentiacan	30. Corabecan	58. Otuquian
3. Andaquian	31. Cunan	59. Paniquitan
4. Apolistan	32. Curucanecan	60. Panoan
5. Araucanian	33. Enimagan	61. Peban
6. Arawakan	34. Esmeraldan	62. Piaroan
7. Ardan	35. Goyatecan	63. Puelchean
8. Atacameñan	36. Guahiban	64. Puinavian
9. Aymaran	37. Guaraunan	65. Puquinan
10. Barbacoan	38. Guatoan	66. Quechuan
11. Betoan	39. Guaycuruan	67. Salivan
12. Bororan	40. Itonaman	68. Samucan
13. Calchaquian	41. Itucalean	69. Sanavironan
14. Cañarian	42. Jivaran	70. Tacanan
15. Canichanan	43. Jurian	71. Tapuyan
16. Carayan	44. Lecan	72. Ticunan
17. Cariban	45. Lorenzan	73. Timotean
18. Caririan	46. Lulean	74. Trumaian
19. Cayubaban	47. Mainan	75. Tsonekan
20. Changoan	48. Makuan	76. Tupian
21. Chapacuran	49. Matacan	77. Uitotan
22. Charruan	50. Miranhan	78. Uran
23. Chavantean	51. Mocoan	79. Yahganian
24. Chibchan	52. Mosatenan	80. Yaruran
25. Chiquitan	53. Moviman	81. Ypurinan
26. Chocoan	54. Muran	82. Yuncan
27. Cholonan	55. Ocoronan	83. Yurucarean
28. Chonoan	56. Onan	84. Zaparan

method almost unknown in other parts of the continent. Speck,¹⁶ Swanton,¹⁷ and others show that the languages in southeastern United States form a regional type, as the



Fig. 71. *The Proposed Consolidation of Stocks in California.*
Kroeber and Dixon

Natchez, Muskogean, Uchean, Iroquoian (Cherokee), and some of the small families along the Gulf Coast. It should be noted that these two examples of geographical grouping result in areas coincident with Areas 3 and 8 (Chapter XIV). In these instances we observe a correlation between language areas and culture areas. If such clustering of

similarities in speech can be interpreted as due to contact, then languages have a geographical distribution similar to that for cultures. However, this remains to be verified because it may turn out that the observed similarities are best accounted for as due to remote ancestral relationships. Incidentally, we note that the existence of regional similarities in languages suggests long residence in a single area.

DISTRIBUTION OF STOCKS

We may summarize the previous discussion by the statement that the chief general result of linguistic investigation in the New World has been the identification and location of the several stocks. Yet, the perfecting of this classification is no mean achievement and is destined to play an increasingly larger rôle in the development of our subject. The important point is that such a classification is based upon the idea of genetic relationship, and so stands in much the same relation to our subject as does evolution to zoology. Thus, there can not be the least doubt that all the Algonquian languages had a common ancestor and the further study of the several divisions of that stock promises to reveal the general outline of this initial type. Further, we have a right to expect that when the comparative studies we have noted are more advanced, definite genetic relations will appear between many of the now recognized independent stocks. For it is apparent that the cultural and somatic unity of the New World necessitates some kind of genetic relationship between the surprisingly large numbers of stocks now enumerated in its linguistic classifications. The pursuit of these important problems will be, in the main, empirical, and as such offers one of the most enticing fields for the scientifically inclined. Yet, this is for the future, our chief consideration here being the distribution of linguistic stocks.

This is shown upon the maps. We see that the most

widely distributed stocks in the northern continent are the Athapascan, Algonquian, Iroquoian, Muskhogean, Caddoan, Siouan, Salishan, and Shoshonean-Nahuatlan. The Arawakan, Tupian, Tapuyan, Cariban, Puelchean, and Tsonekan are the largest of the southern continent. In North America, the eight large stocks enumerated occupy practically all of the United States and Canada save the Arctic and Pacific Coast belt and a small part of the Gulf Coast. The lower part of Mexico and southward to the Isthmus is also the home of many small stocks. Thus of the entire eighty-five stocks in North America, all but eight are crowded into less than one-eighth of the continental area where they occupy marginal positions. In South America there is some confusion arising from the interspersion of many stocks in the Amazon basin, but again we seem to have the smaller stocks on the Pacific side, though their marginal positions are not so prominent. One curious fact is that in the regions of higher culture we find great linguistic diversity while the very large widely extended stocks are met with chiefly in the regions of lower culture, though not exclusively. It does not follow, however, that the populations speaking the stock languages of the latter were much larger, because they were, in the main, hunting peoples and would require a large range for the support of each family. Whatever else these facts may signify, they indicate that the development of higher culture was not a linguistic phenomenon.

Another observable tendency of the large stocks is to spread over a single geographical area. Thus, while the Siouan stock has a few straggling remnants on the coast, the great main body is found in the open plains west of the Mississippi. The Athapascan, Algonquian, Salishan, and Shoshonean stocks show similar tendencies. In South America this is not quite so clear, but still seems to be the prevailing tendency. This suggests that the ancestors of these stocks took up their abodes in these respective areas and that

their later distribution is the result of normal expansion, a common cultural bond tending to hold them to the same area. The detached groups appear to have modified their culture in response to their change of habitat. This does not signify that these detached tribes were always the migrants for it may sometimes have been otherwise. Thus, we have some very important problems in these larger stocks, for example the Athapascan. Here we have a right to expect that future linguistic research will reveal the oldest language group and its relations to the others and that from this their relative movements can be deduced. As it now stands, we can form no positive idea as to their original home, whether it was in Arizona, Oregon, or Canada. The most worthy suggestion comes from Sapir who states that the observable resemblance of Athapascan to the languages of the adjoining Pacific Coast is a strong argument in favor of a northern cradle land.¹⁸

Of almost equal importance are the Algonquian, Siouan and Shoshonean-Nahuatl problems. The Algonquian and Siouan stocks have somewhat similar distributions, a large compact group with a few outlying detached fragments. In the former the detached Arapaho and Blackfoot speak very widely divergent Algonquian languages and if we admit Sapir's identification of Wishoskan (Wiyot) and Weitspekan (Yurok), we have representatives still farther removed geographically and correspondingly divergent. The Cheyenne appear somewhat less divergent than the Arapaho but we have historical reasons for believing their separation from the main body to be recent.¹⁹ On general grounds, it has been proposed that the ancestral home of the Siouan stock was on the Atlantic Coast, where representatives were found, but it appears that the Biloxi of the Gulf Coast are nearer the central linguistic types than those farther east.²⁰ We see here a tendency for the outlying groups to be more divergent from the main body than those nearer, a relation

favoring the view that these detached groups represent stragglers, but, whether laggards or true wanderers, is difficult to decide. In the author's opinion the probabilities favor the latter. Reasoning from the marginal phenomenon of faunistic distribution, it has often been assumed that the very small stocks on the coast belts represent the survivals of the more primitive groups. This view seems to have some justification, but it has not yet been demonstrated that these stocks are the more archaic forms of language. Hence, this interpretation so far as it applies to language, must be regarded with caution. The unfortunate fact is that not even a beginning has been made with the chronological problem in aboriginal linguistics, so that we can not hazard a guess as to when the various stocks came into existence.

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|-------------------------------------|---------------------------------|
| 1. Gallatin, 1836. I. | 12. Boas, 1916. II. |
| 2. Powell, 1891. I. | 13. Goddard, 1905. I. |
| 3. Dixon and Kroeber, 1913. I. | 14. Kroeber, 1911. I. |
| 4. Swanton, 1924-1925. I. | 15. Dixon and Kroeber, 1903. I. |
| 5. Sapir, 1915. I. | 16. Speck, 1907. I. |
| 6. Sapir, 1929. I. | 17. Swanton, 1915. I. |
| 7. Sapir, 1913. II; 1915. II. | 18. Sapir, 1915. I. |
| 8. Whorf, 1935. I. | 19. Michelson, 1912. I. |
| 9. Powell, 1891. I; Boas, 1911. II. | 20. Dorsey, J. O., and Swanton, |
| 10. Thomas and Swanton, 1911. I. | 1912. I. |
| 11. Chamberlain, 1913. I; Brinton, | |
| 1891. I. | |

CHAPTER XVIII

SOMATIC CLASSIFICATION

WE come now to the man of the New World himself, instead of his works. While it may be more logical to begin here, the discussions under this head also call for a general understanding of the geography and relative distributions of all other characters. Further, this study of man presents certain technical difficulties which make it unsuitable for the first introduction to our subject. The fundamental difficulty has been to find a definite and consistent basis of classification. For example, the system developed by systematic zoology is not strictly applicable, because the existing peoples of the earth are very near to each other. Our experience with zoological classification leads us to expect that when we offer a morphological grouping of mankind, we shall base it upon descent. While this may be asking too much of a mere classification, we must not overlook the fact that here is the real problem in the case. Thus, in the New World, we must eventually know from what kind of men the original stock sprang and what elements, if any, have been later assimilated by it.

The most obvious method of approach to this solution is by morphological analysis of the main geographical groups. First, if we take the New World as a whole, certain common characters may be taken as significant. For one thing, the hair of the New World tends to be straight and black; indeed, the variations from this are so rare that we may consider straight black hair as universal. The only other part of the world where this is a distinguishing character is in Asia, particularly among Mongoloid peoples. A close

view of the hair of mankind, as a whole, indicates great stability as to type, in consequence of which many anthropologists make it the basis of the first classification. We may, therefore, set down the above affinity with Mongoloid peoples as one very strong indication of common descent.

A few exceptions to straight hair have been found in South America under conditions that make it unlikely that they are of European origin.¹ However, a great deal more field-work will be necessary before this point can be made clear. If, however, it proves out that an element of wavy hair once entered the New World population, we shall have good ground for suspecting a non-Asiatic origin for at least one New World strain.

Skin color is rather an elusive matter, since its gradations do not admit of very precise definition. Some anthropologists see the basic color of the New World as yellow, others as brown. The yellow is clearly present in many tribes of Brazil and on the west coast of North America, but the remaining portions of both continents show populations ranging from dark chocolate to light brown. According to our own observation, this light color turns toward yellow, and the assumption of an original yellow race is fully justified. This, again, suggests Asiatic affinities, but just what may be the history of this dark strain in the yellow is not clear.

The nose has also been considered as Mongoloid, but as it presents great variety of form in both the north and the south and is not easily distinguished from the nose of the Pacific Islands and some other parts of the Old World, no great stress can be laid upon it, at least, until very carefully studied. Again, one of the most striking facial characters of Mongolian peoples is the eye fold, or, in popular language, the "slanting eye." A number of observers claim to see faint traces of this in the Indian, but we should proceed with caution where the resemblances are so vague. Yet, a

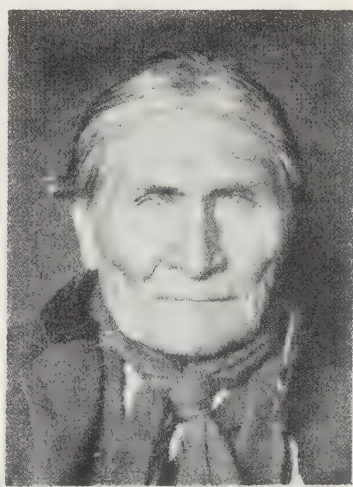


Loucheux Man and Woman Showing Eskimo Characters

Boas, 1901. I



A Pawnee Indian



Bureau American Ethnology

Geronimo, Apache

Fig. 72. North American Types



Photographs by Ehrenreich
Fig. 73. Brazilian Types



Fig. 74. Patagonian Types

recent author² asserts its positive identification in the Andean region and also in parts of the Amazon country. In North America, it is prominent among the Eskimo and appears in Siberia, which fact gives us continuity with Asia.

BREADTH OF FACE

In popular belief, the aboriginal face is broad in respect to the width of the head, or "the cheek bones are prominent," resulting in what is sometimes characterized as a disharmonic face. This belief is, in the main, justified, when we review the measurements that have been made. The studies of Boas³ and Jenks⁴ upon mixed-blood Indians in the United States, show that the relative width of face among these is still greater than in case of whites, while reference to the accompanying table shows a very positive difference between the whites and full-blood Indians, in both North and South America. Thus, it is generally true that the New World peoples are characterized by broad faces. This feature is strongly accented in the Eskimo, but not sufficiently to place them in a class by themselves. Of Old World peoples, the broad faces are chiefly among Asiatics.

VALUES OF FACE-BREADTH HEAD-BREADTH INDEX FOR MALES
(Compiled from Jenks⁵)

<i>Nationality</i>	<i>Number</i>	<i>Index</i>
Scotch	50	90.34
French	100	90.85
Mixed-Indian	60	94.68
Mixed-Indian	8	92.14
Mixed-Indian	12	92.52
Mixed-Peruvian	24	90.40
Ojibway	24	97.19
Mexican	2300	94.90
Apache	148	94.30
Pima	51	98.63
Peruvian	124	95.30

FLATTENING OF THE FEMUR

Another anatomical trait supposed to characterize native Americans is an excessive flattening of the femur, or *platymeria*. A résumé of the literature, however, leaves one in doubt that any such variation can be definitely assigned to the New World as a whole, though some reports of Hrdlicka⁶ suggest that Indians differ from whites and negroes. The same can be stated for flattening of the tibia, or *platynemia*. If the theory of Manouvrier that the phenomenon is dependent upon the muscular development of the individual, is accepted, then these flattenings of the shafts have no racial significance. (For a brief résumé, see Duckworth.⁷)

Another curious femoral variation is the presence of a third trochanter, which Duckworth believes is, to a certain extent, correlated with *platymeria*. The most convenient frequency table so far compiled is that of Deniker,⁸ which shows a range from 13 per cent. for prehistoric Europe to 64 per cent. for the Fuegians of the New World. The great frequency of this *trochanter* among the Fuegians raises a suspicion as to the remainder of the New World, but satisfactory published data are wanting.

THE TEETH

In recent years a great deal of attention has been given to the teeth of mammals and man. Interest in human teeth has been stimulated by such epoch-making Old World discoveries as the Pithecanthropus and the Mauer jaw, because the associated teeth seemed to be morphologically intermediate to modern man and the anthropoids. It was inevitable therefore that the teeth of the different living races should be carefully scrutinized and while the problem is still in the pioneer stage, a few significant results are at hand. The

most distinctive tooth character in the New World is the shovel-shaped incisor.

This character has been recently reviewed by Hrdlicka⁹ showing that, so far as the data at hand go, more than 90 per cent of the Indians show this peculiarity in unmistakable form. While the character is thus not invariable to the extent that an Indian can be absolutely identified by his incisor teeth, its frequency is great enough to make it an important qualitative character. Among the peoples so far examined this peculiarity is most pronounced among the Mongoloids of Asia and rarest among Europeans and American negroes. (The data given by Hrdlicka run: white, 6; negro, 10; Hawaiian, 47; Chinese, 60; Japanese, 85; Indian, 91.0). Thus, shovel-shaped incisors may be set down as one of the most distinctive of aboriginal characters.

Again the patterns of the molar teeth promise to be of some significance. Thus Sullivan¹⁰ notes that the number of cusps on the lower molar teeth vary from four to five, and while it has not been possible yet to extend his observations to all parts of the continent, it appears that among the American Indians approximately 75 per cent show five cusps. Unfortunately, there are at hand no data for the Mongoloids of Asia, but the white race ranges from 6 to 2 per cent, the negro around 35 per cent. The Australian, on the other hand, ranks but slightly below the Indian.

Note may also be taken of comparative observations on the bite as recorded by Hellman.¹¹

Indians	Edge to edge bite.
Eskimo	Edge to edge bite.
Mongolians	Tend to over-bite.
Hindus	Somewhat over-bite.
White Americans	Somewhat over-bite.

In the importance of these observations, particularly the last, the possibilities of modification by function should not

be ignored. But taking the data as they now stand, both human and mammalian, shovel-shaped incisors, five cusped molars, and edge to edge bite are the more primitive, or older, tooth characters. In the most distinctive of these characters, shovel-shaped incisors, the peoples of the New World again show a close relationship to the Mongoloids. It is apparent, therefore, that further investigation of this subject is urgent, since here appears one of the most promising leads in the problem of man's origin and differentiation. What is especially needed is a careful survey of all American and Asiatic skeletal material and a careful plotting of distribution for the several tooth characters, the data to be supplemented by observations upon the living. With such in hand one could proceed to the underlying biological problems with full confidence.

This about exhausts the list of widely diffused common characters for the New World as a whole. As we have seen, the somatic line-up is with the Mongoloid peoples, and, while we are facing this way, attention may well be called to other similarities asserted by certain observers. Posnansky¹² reports the Mongolian spot in the Andean area, and an anatomical peculiarity of the cranium in the maxillar or region of the *processus frontalis* which is absent in the European, but prominent in Mongolian crania. It seems best, however, to defer further discussion of this subject until we have considered the differentiation of internal New World types and their distributions.

HEAD FORM

Head form has received so much attention that it almost monopolizes the subject matter of physical anthropology. As to what extent this is justifiable, remains to be seen. The special literature for the New World contains a large mass of measurements, both on crania and heads of living subjects, from which we can form some idea of their classi-

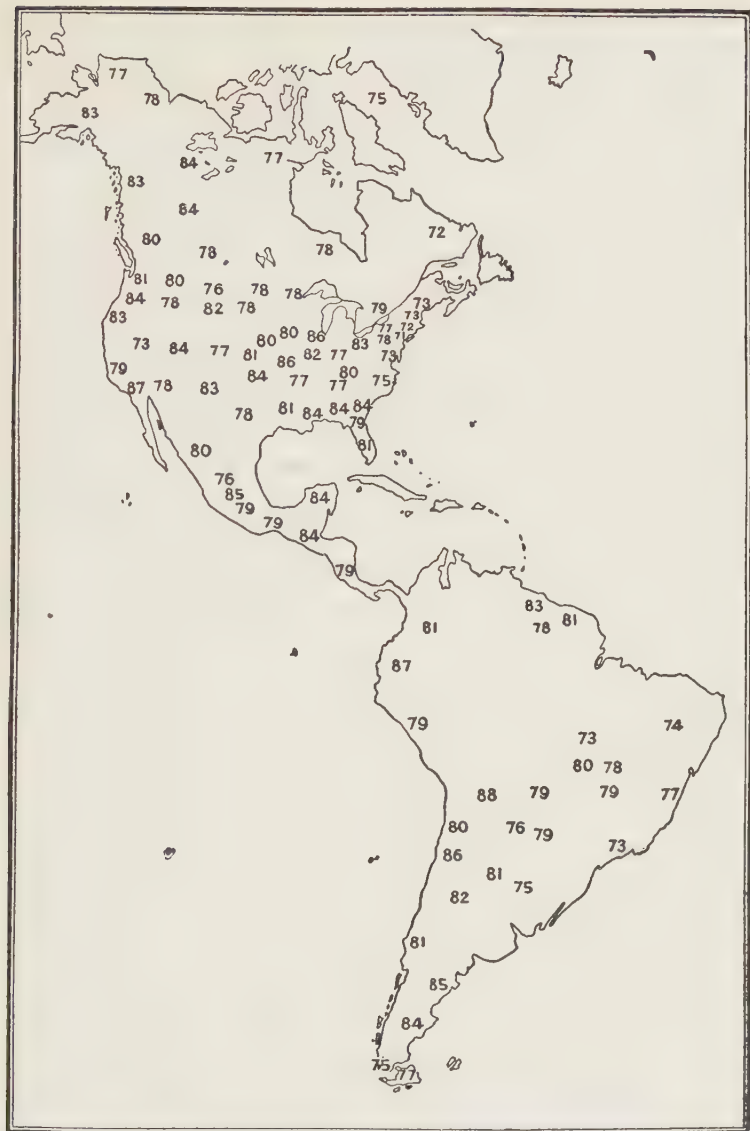


Fig. 75. The Cephalic Index

ficatory value. The most conventional of these measurements is the cephalic index, or the maximum breadth of head divided by the maximum length and the quotient expressed in per cent. Ripley has plotted the distribution of this index on a map of the world,¹³ but an inspection of this suggests that the New World cannot be sharply differentiated on the basis of the cephalic index alone. It is true, however, that the broadest heads are here accredited to Asia and the longest have minor representation in the New World, which would give our hemisphere a kind of intermediate position. Yet, we should not give much weight to the specific boundaries indicated upon such a map because the cephalic index numerals have been arbitrarily grouped. A better method would be to plot according to each numerical unit of difference. To do this successfully, we must use a large map and enter in its proper place the actual cephalic index for each group of people. A condensed form of such a map for the New World is presented here (Fig. 75).*

From this it appears that we have the most data for the United States, but, in general, all the larger parts of both continents are represented in some fashion. Notwithstanding such discrepancies, the data as given should approximately outline the general distribution of the cephalic index.

Perhaps the first impression we get from this map is one of great range and variability. The scattered index values may even suggest a random distribution. Yet, it appears that the lowest values tend to cluster around certain points, as the Gulf of St. Lawrence, southeastern Brazil, and southern Patagonia, while the highest seem to mass on the Pacific side of both continents. On the other hand, if we regard

* The cephalic indices appearing on this map are based upon skull measurements, but contain also those reported for living subjects. The special works upon craniometry give the accepted methods for reducing the latter to units of the former. The indices are from the published notes of all observers; hence, some allowance must always be made for errors of observation, though in the long run these should cancel out.

the numerical range of index units, it appears that the total New World series falls but little short of that for the Old World. In fact, both the lowest and highest cephalic indices recorded by Martin¹⁴ are from the New World: Pericues (Lower California), 66.1; Californians, 89.7. The indices used in our map range as follows:

71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
1	2	5	1	5	3	9	14	10	8	8	3	6	11	2	2	2

Such lack of distinction between the two hemispheres in contrast to what we found true of other characters leads one to suspect that head form is exceedingly variable.

In this connection, it may be noted that investigations among the immigrant population of the United States, and also among the inhabitants of Porto Rico¹⁵ reveal a rapid change in cephalic index. This suggests that there are some powerful environmental and physiological factors in the cause complex that produces head form. As compared with heredity, these are minor factors, but still strong enough to produce modifications of several numerical units in the calculated indices. Certain empirical observations led Boas to assume a change of five to six units possible in a few generations. Unfortunately, all these observations have been upon Europeans, but it seems a fair assumption that if the principle is found to hold for one, it will also hold for the other.

In the earlier parts of this chapter we found evidences of homogeneity, and though there is a perplexing range of variation in head form, the question still remains as to whether these fluctuations are not mere pulsations around a single norm. If such they prove to be, then we have homogeneity in head form as well as in other characters. This is a difficult problem, but some approach to its solution can be made by statistical methods.

ORBITS AND NASAL SKELETON

A great deal of attention has been given to the form of the eye sockets or orbits, and the nasal skeleton. The former takes a quadrilateral form whose varying breadth and height can be measured. The relation of the latter to the former is expressed as the orbital index. The tabulation of such data as we found in the literature presents a symmetrical distribution with an approximate node at 87. As in the case of other characters we find the orbits of each local group to vary, but all to cluster about a single norm. Since there are several ways of measuring the orbit and the several authors are not often explicit as to the method employed, the above result should be regarded as tentative. Both Deniker¹⁶ and Martin¹⁷ have compiled standard lists of this index, which furnish the additional series in our table. The series we have for the New World is of the symmetrical type which gives us greater confidence in its mean value. Martin¹⁸ regards the Fuegian as in the lowest class, with the Tasmanian and Australian, while the Patagonian and Indians in general have very high indices, as also do the Eskimo and Mongolians.

The skeletal structure of the nose affords further opportunity for measurement. The reader interested in the technical details of the subject may consult the very concise and convenient statement of Deniker,¹⁹ together with a tabulation of nasal indices for representative groups from all parts of the world. This index is analogous to that for the orbit, expressing the relation between the height of the nasal bones and their width. From the recorded indices, it appears that the white race is at one end of the series and the negro at the other.²⁰ Just where our natives will fall is not yet clear, but in last analysis our conclusion must rest upon qualitative observations, and it is the opinion of our leading anthropologists that there is a recognizable

form for the nasal opening of New World peoples as a whole. In a recent review of the subject Sullivan shows that the minute form of the lower border of the nasal aperture, or the *apertura pyriformis*, takes on a rounded, or in-

DISTRIBUTION TABLE FOR THE ORBITAL INDEX

<i>The New World</i>		<i>All Races</i>	
		<i>Deniker</i>	<i>Martin</i>
76			1
77			1
78			0
79	1		2
80	2		0
81	0	3	1
82	1	0	2
83	3	2	3
84	3	6	5
85	2	4	4
86	3	4	6
87	9	4	1
88	6	4	7
89	6	6	4
90	4	3	2
91	2	3	4
92	1	6	1
93	2		
94	0		
95	1		
96	0		
97	1		

fantile, form among the Indians. This is also highly characteristic of Mongoloids.

In conclusion, then, we find in the New World face and head many indications of somatic homogeneity strongly suggesting unity of origin.

BLOOD GROUPS

The biochemistry of the blood is now an important field of inquiry. Anthropology has been interested in the observed differences in blood grouping among different races.²¹

The blood of individuals is classed as O, A, B, AB, according to certain biochemical reactions, and these four types of blood seem to be inherited. Some of the earlier tests of Indians revealed many individuals of Type O, suggesting that the aboriginal population was of that type. Later, so many exceptions were reported that until an intensive study of the subject is undertaken no definite statement can be made, other than that the tribal groups so far tested show wide variation.

BODILY PROPORTIONS

Among the many other aspects of somatological description that promise well, is bodily proportion. This is usually expressed in diagrammatic form, as in Fig. 76. Though there are many published measurements of New World natives, in few cases do they give sufficient data for the construction of such diagrams. In fact, the four we have here about exhaust the subject. Yet, they show a striking similarity in form and proportions, suggesting that the New World native is of one bodily type.

This method of comparison seems to have been devised by Thomson²² from whom three of the diagrams in Fig. 77 are taken.

SUMMARY OF SOMATIC CHARACTERS

In this brief review of a large subject, we have sought, first of all, the characters truly definitive of New World man. The difficulties besetting such a quest are now apparent, but a summary of some kind is necessary to progress. Accordingly, on the basis of the preceding and the available studies, the following is offered:—

1. The hair is straight, of medium coarseness, and black. Body hair scant. The skin color is a brown, ranging from yellowish to chocolate tones. Eyes tend to be dark brown.
2. The head is quite variable as to length and breadth,

but appears to approximate an intermediate position in the world's series. On the other hand, the face is broad in proportion to the head. As to facial angle, there is moderate prognathism, and this, as well as size of mouth, thickness of lips, proportions of nose, size of teeth, takes an intermediate rank between whites and negroes. Finally, there is a slight slant to the eye, reminding one of certain Asiatics.

3. The incisor teeth are markedly concave, or shovel-shaped and the lower second molars tend to five cusps instead of the usual four.

4. In bodily proportions we note first an intermediate position between whites and negroes with respect to length of arms and legs. The hands and feet are relatively small. The capacity of head and estimated brain weights also give intermediate values.

RELATIONS TO MANKIND IN GENERAL

Assuming for the time, at least, the single origin of all New World peoples, we may now turn to the question in which all are interested, *vis.*, the relation of the Indian to mankind in general. As has often been stated, the affinities of New World man are with Mongolians and, to a less marked degree, with Polynesians. With the former we have close parallels in hair, form of eye, breadth of face, and bodily proportions. With the Polynesians, the agreements are chiefly in pigmentation and to some extent, in the hair. Hrdlicka²³ has formulated a convenient statement of the problem, which may serve as our point of departure:—

The conclusions, therefore, are: the American natives represent in the main a single stem or strain of people, one homotype; this stem is identical with that of the yellow-brown races of Asia and Polynesia; and the main immigration of the Americans has taken place, in the main, at least, gradually and by the northwestern route in the earlier part of the recent period, after man had reached a relatively high stage of physical development and multiple secondary differentiations. The immigration, in all probability, was a dribbling and prolonged

overflow, likely due to pressure from behind, or want, and a search for better hunting and fishing grounds in the direction where no resistance of man as yet existed. This was followed by multiplication, spread, and numerous minor differentiations of language due to isolation and other natural conditions, and by the development, on the basis of what was transported, of more or less localized American

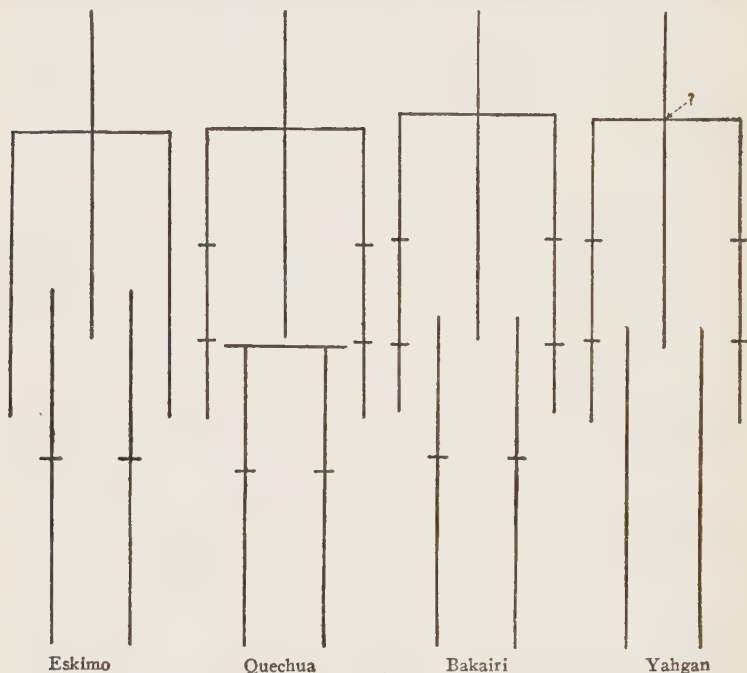


Fig. 76. Diagrammatic Representation of Average Bodily Forms for the Eskimo (Duckworth, 1900. I), the Quechua (Ferris, 1916. I), the Bakairi (Ehrenreich, 1897. I), and the Yahgan (Deniker, 1900. I)

cultures. It is also probable that the western coast of America, within the last 2,000 years, was on more than one occasion reached by small parties of Polynesians, and that the eastern coast was similarly reached by small groups of whites, and that such parties may have locally influenced the culture of the Americans; but such accretions have nowhere, as far as we know to-day, modified the native population.

Such conclusions must, in last analysis, rest upon a satisfactory classification of mankind as a whole, but as stated

at the outset, this has proved a difficult problem, and the reader will find the literature of the subject very perplexing, each investigator proposing a different scheme. Upon analysis, however, we find these schemes have a great deal

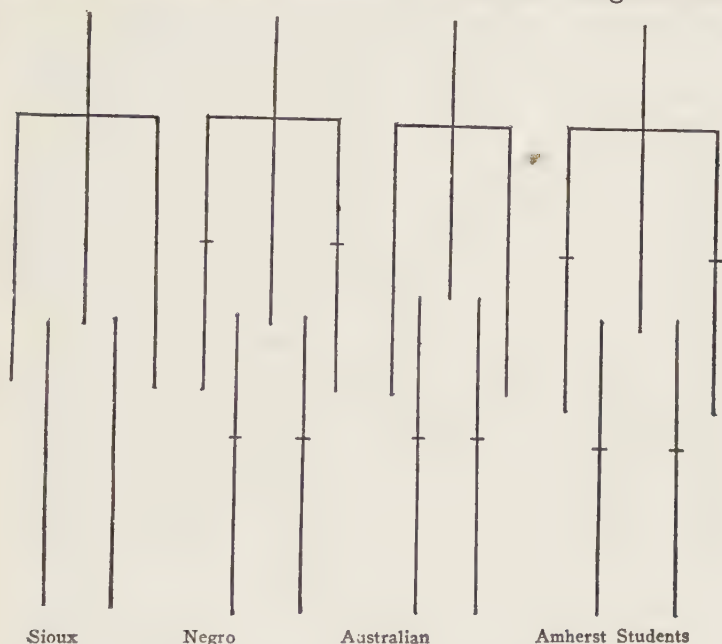


Fig. 77. *Bodily Forms from Various Races: Sioux Indians (Sullivan, 1920. II); Negro and Australian (Thomson, 1899. I); and Amherst Students (Hitchcock, 1888. I).*

in common and, hence, are fairly intelligible. In the first place, they fall into two groups according to the controlling concepts. One of these classifications is purely objective and empirical, no regard being paid to ancestral relations or other related factors, while in the other, the ideal is to form a classificatory scheme that will express genetic relationships. The exposition of these systems does not fall within the scope of this work, but a few of their main features may be noted.

Taking men as they come, experience shows that the most

definitive objective characters are hair, skin color, and head-face form. Of these, the first is most persistently transmitted from parent to offspring, and so tends to remain constant. In the main, three kinds of hair are recognized: straight, wavy, and woolly, each having a distinctive cross-section and associated peculiarities.²⁴ With these as the points of departure, the people of the world fall into three groups:—

1. Straight hair (*leiotrichi*). The Asian-American group.
2. Wavy hair (*cymotrichi*). The Polynesian-European group.
3. Woolly hair (*ulotrichi*). The Australian-African group.

It is important to note that, though this grouping is strictly based upon the hair, the majority of all classifications recognize these three great clusters of mankind, their differences arising from transferences of the more doubtful examples from one class to the other. A summary of the main characters for each is offered by Giddings: ²⁵—

I. THE AUSTRALIAN-AFRICAN GROUP.

Characteristics: black skin, dolichocephalic (long-headed), prognathic, woolly or frizzly-haired (cross-section of hair very elliptical).

Area of distribution: Australia and Africa south of the equator.

II. THE POLYNESIAN-EUROPEAN GROUP.

Characteristics: fair skin, mesocephalic, orthognathic, straight or wavy hair (cross-section slightly elliptical).

Area of distribution: broad zone from Polynesia northward through southwestern Asia and northern Africa and most of the continent of Europe.

III. THE ASIAN-AMERICAN GROUP.

Characteristics: yellow or red skin, brachycephalic (broad-headed), narrow-eyed, lank or straight-haired (cylindrical in cross-section).

Area of distribution: eastern Asia and western America, chiefly north of the equator along the semicircular shore-line of Asia and America.

This investigator regards the second or middle group as the main stem, the generalized ancestral stock, from which the other two diverged and specialized. The American aborigines are regarded as a diverging branch of the Asiatic group. A simpler terminology is used by most writers: negroid, caucasoid, and mongoloid, respectively. The tendency is to regard the caucasoid and mongoloid as nearer to each other than to the negroid. In the present-day world these distinctions are frequently obscured by blood mixture or by intermediate groups. Nevertheless, there is justification for regarding the three primary strains of mankind as negroid, caucasoid, and mongoloid. In any case, our problem lies within the aboriginal New World and, since a certain somatic unity is seen to pervade the two American continents, we may assume a single origin for the Indians. Even the Eskimo are now recognized as being more like Indians than Asiatic Mongolians.

The next point to consider is the distribution of mankind over the earth. In the synthetic treatment of such a large problem, we need the greatest possible array of corrective data. While such data cannot entirely mitigate the weakness of all interpretations based upon incomplete series of observations, they, at least, serve as friendly guide-posts. If, instead of focusing our attention upon man alone, we take in the whole gamut of mammalian dispersion, we greatly increase the number of these corrective aids. Thus, a brief perusal of general books on mammalian life²⁶ suggests at once the existence of a veritable swarming center in the heart of Asia. It is not, of course, contended that all mammals arose there, but that a surprisingly large number of the most distinctive families can be successfully localized within the general limits of that continent. This is supported by specific data when we restrict our view to the anthropoidea, whose Asiatic origin is generally accepted. A convenient review of the subject is to be found in Matthew's

"Climate and Evolution," from which we reproduce Figs. 78 and 79. From these we see how, in a general way, the many diverse forms of primates have swarmed out of the Old World, one after the other. It is believed that the anthropoid apes culminated in southeastern Asia at the close of Pliocene time (Fig. 78 P), from which it follows that such early humanoid forms as Pekin Man, Java Man, and Pithecanthropus, all of the Middle Pleistocene, appeared in the same part of Asia. Possibly the intermediate forms of tool-using apes, yet to be discovered, will be found in early Pleistocene deposits of the same region. Moreover, it is natural to look toward the same Asiatic homeland for the emergence of modern man. But turning back to man's mid-Pleistocene ancestors, we note that they were confronted by a world of changing climatic periods, changes which exterminated most of the Pleistocene mammals. Yet, man thrived under these changes, eventually over-running the entire land surface of the globe (Fig. 80). His survival and subsequent expansion are best explained by his capacity for adjustment to many kinds of environment. We speak of these adjustments as culture. In the main, however, the same factors controlling the dispersion of mammals, disposed man to follow the same beaten trails.

When we consider the map in Fig. 80, it appears that the New World is geographically more remote than either Africa, Europe, or the insular area, and has but one point of contact, but that point is in direct line with the assumed center of dispersion. On mere geographical grounds, we should locate the extremes of expansion in Patagonia, Greenland, Cape Colony, Ceylon, and Tasmania. To this list may also be added the extreme western parts of Europe, as the Canaries and British Isles. These are veritable blind alleys in which primitive man was ultimately brought up short and where some of his descendants are still marking time. It so happens, however, that the fluctuating polar ice-cap hovers

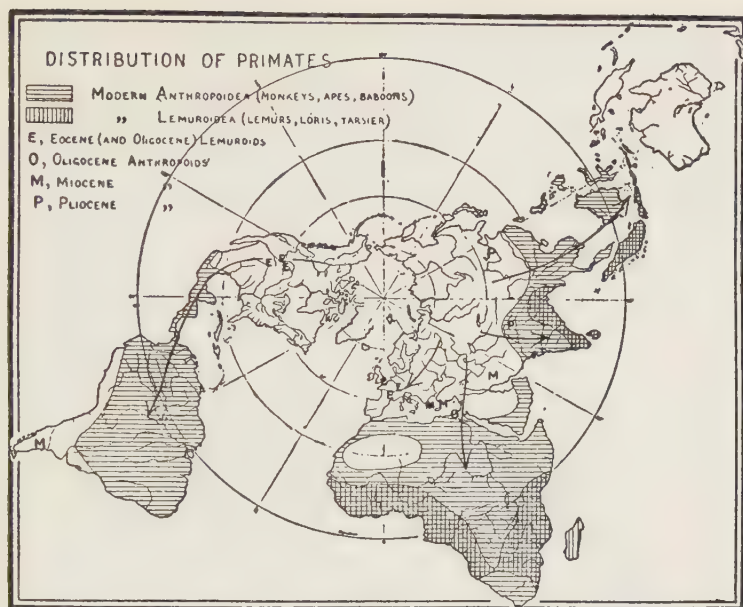


Fig. 78. Lines of Dispersion for the Primates. Matthew, 1915. I

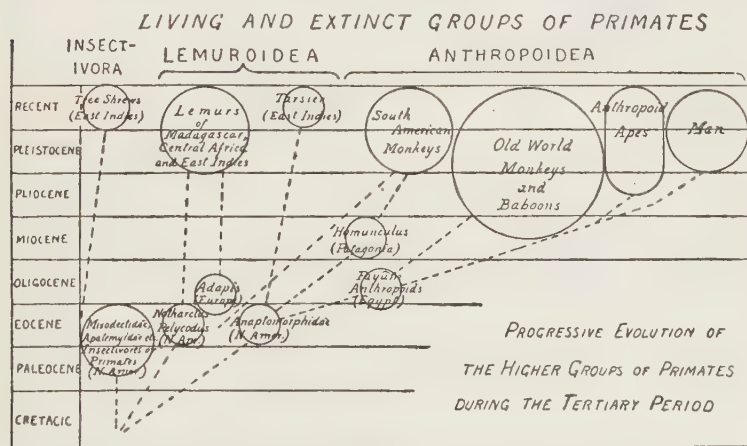


Fig. 79. Phylogenetic Relations of the Living and Extinct Groups of Primates. The circles indicate the size and known geological range of the several groups, the dotted lines their most probable derivation. Their supposed relations to certain Insectivora and intermediate extinct groups are also indicated. Matthew, 1915. I

over the single narrow bridge to the New World and the part it has played in the story of the primates is truly wonderful. The reader familiar with the recent literature on Palæolithic man need not be told that the pulsation of this ice-cap is proving the only reliable time clock for human



Fig. 80. Distribution of the Primary Divisions of Mankind.

culture. At four intervals, at least, this ice field crept down into North America and into the Old World, each time greatly modifying the distribution of mammalian life.

Though we now have a fairly complete outline of man's relation to these events in Europe, we are quite in the dark as to what happened in Asia and America. The older United States school of anthropologists, led by Holmes, vigorously denied the possibility of interglacial man in the New World, but such a conclusion seems difficult to harmonize with the number and variety of aboriginal cultures.

Many geologists hold that ten to twenty thousand years is all that can be allotted for the lapse of time since the last retreat of the ice in the New World. This, of itself, might give time enough to account for the growth of American culture; but the ice receded gradually, in fact, still hangs about the connecting bridge between Siberia and Alaska, and unless it turns out that this route was open during the whole period of glaciation, leaves a narrow margin for the development of aboriginal cultures. Yet, exactly the same difficulty confronts us in the Old World, for it is clear that the earlier phases of Egyptian development also leave us a narrow margin, if we assume that all the higher cultures we know were developed since the dawn of the Neolithic in Europe. The important difference, however, lies in that, whereas, we know that man was even at that time a very old inhabitant of the vicinity, his corresponding presence in the New World is denied. New data suggest that the first men came to North America on a hunting horizon similar to late Palæolithic and were followed by Neolithic peoples. By the sixteenth century, Peru and Mexico had almost reached a Bronze Age, but, even so, were many centuries behind Europe. Between Mexico and the advanced Old World cultures were tribes many of which could scarcely qualify as full Neolithic. All this is consistent with the idea that the fundamentals of Old World civilization had not reached the early immigrants from Asia. Once here they may have developed as rapidly as in the Old World, but they had a much later start.

If we leave out of account everything below the Tropic of Cancer, a certain parallelism appears between western Europe and eastern North America, though far more strongly accentuated in the former. The Crô-Magnon man, who appears rather abruptly in western Europe, has in his disharmonic face, one of the most prominent New World characters, and it is not at all improbable that future research in Asia will give grounds for assuming the Crô-

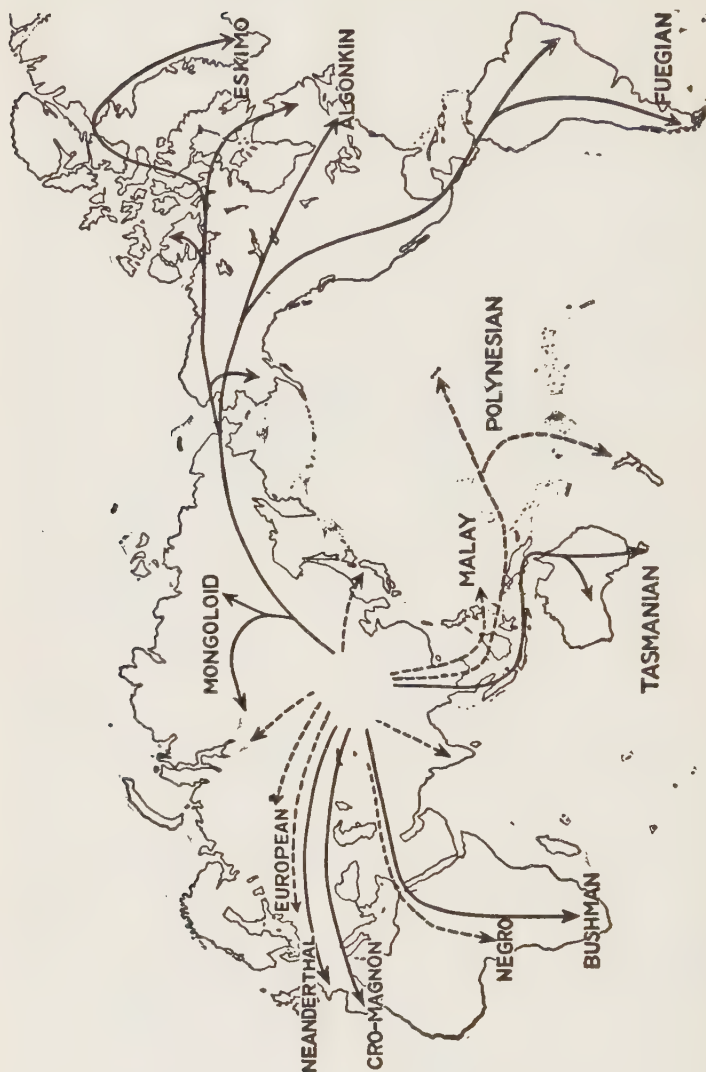


Fig. 81. General Lines of Dispersion for Mankind. The broken lines represent the more recent movements

Magnon and contemporaneous New World peoples to be collateral branches from a central Asiatic type. More than once, attention has been called to certain vague similarities between certain Paleolithic races and the Eskimo, and in the New World certain older skulls from the remoter parts of South America are not far removed from this same Eskimo type. Incidentally, we may note that the Chancelade skeleton in western Europe belonging to Magdalenian time, is quite similar to the modern Eskimo. The earlier races appearing in Europe tend to be long-headed, and we have noted a less marked, but still noticeable tendency for the long heads in the New World to cluster on the extreme margins. That this is rather fundamental appears when we regard mammals as a whole, for we read that "when the parallel series in Europe and North America are sufficiently complete, they are seen to be not parallel phyla of independent local evolution, but periodically recruited by more progressive new stages, apparently from a common center of dispersal. The relations are like those of one side and the other of a branching tree whose trunk region is unknown to us."²⁷ The human phenomena we have been considering appear, therefore, as but an integral part of mammalian expansion, and, for that reason, become more evident.

In conclusion, then, we seem to have a large mass of *hominidæ* occupying the greater part of Asia and America, the tendency of which was toward round-headedness and straight hair; hanging on the outskirts of these were many variants. This interpretation is not antagonistic to those who regard the modern Indo-European as distinct from the Asiatic-American branch, for the suggestive parallels between earlier types of western Europe and America arise in a much earlier period of man's history. That the New World native is a direct descendant of the Asiatic Mongolian is not to be inferred, for the differentiation is evidently remote; what is implied, is that somewhere in the

distant past the Asiatic wing of the generalized type diverged into strains, one of which we now know as Mongolian, and another as American.

GROUPING BY SOMATIC CHARACTERS

After these necessary digressions we may turn to our initial task, the classification of New World peoples according to somatic characters. In the first place, our previous discussions have revealed the primary somatic units to be the in-breeding local social groups. The resemblances of individuals within these are comparable to family resemblances among our own people. If, for example, we take the Navajo, Apache, Pawnee, Teton-Dakota, Patagonian, and Eskimo, there is often no difficulty in placing an individual by his portrait alone. On the other hand, to reduce the characters of identity to exact statement, is extremely difficult, just as is the case when one attempts to write a facial description of an acquaintance that would clearly identify him. Our problem, then, is quite the same as in the preceding chapters, *viz.*, to find some empirical grouping for these small somatic groups.

Those who are reasonably familiar with anthropological literature can understand the sexual conditions that readily contribute to the leveling down of family differences to the group type. When we take up the question of group resemblances, we may, upon *a priori* grounds, assume that contiguous groups will often mix to an extent sufficient to bring them very near to each other. The data for tribal social practices give every justification for this assumption. Then when one plots out a series of anatomical measurements on a map he finds that high values often tend to cluster in one geographical area and low in another. Thus, in case of stature, we rarely find a single tall social group surrounded by groups of low stature. For example, the Cheyenne are rated as tall (1,748 mm.), near them were the Crow (1,732),

Arapaho (1,728), and the Dakota (1,726). In fact, all the tribes of the bison area which cluster around the above group show high stature, but receding to the south, west, and north. This is comparable to what we find to be true of culture traits, *viz.*, a tendency to radiate around a geographical center. Another good example is around the mouth of the Colorado River, where the Mohave are rated at 1,740, the Maricopa at 1,722, the Yuma at 1,700, and the Pima at 1,703, while surrounding them are groups of lower statures. A similar grouping appears in head measurements, a fine illustration of which is seen in Hrdlicka's²⁸ data on the Indians of northeastern United States, where we find certain agreements between tribal groups that are contiguous. In short, it appears that as we pass from one social group to another, there is a gradation of somatic characters and that these gradations radiate from centers in much the same way as we noted for culture characters.

Now, if we generalize, it appears that the same leveling causes that unify the internal somatologies of the several social groups also operate to reduce group differences. On logical grounds this leveling will be most marked where the opportunities for sexual contact are greatest, and it follows that these opportunities will be greatest where cultural diffusion is accelerated. It appears, then, that our best lead in the development of a somatic classification is to seek for correlated distinguishing characters in each recognized culture area.

Before proceeding, it may be well to try grouping a few measurements according to these areas. The most accessible are stature and cephalic index, for which we present the accompanying tables. If, for instance, there were no correspondences between the statures of social groups within the same area, we should expect the distributions in the successive columns to be similar, or to have a chance relation. This is not what we observe, but, on the contrary, in almost

STATURES OF TRIBAL GROUPS ACCORDING TO CULTURE AREAS

	Eskimo	Eastern Woodlands	Mackenzie	Plains	North Pacific Coast	California	Southwest	Southeast	Mexico	Total
cm.										
150										
155	1								2	3
160	1				3	2	2		3	11
165	3		2	1	8	2				16
170		5	2	10	4	2	6	3		32
175		1		3			1	1		6
180										—
										68

every case there is a tendency to cluster around an area average. Thus, our initial assumption seems justified and we may expect a somatic grouping of natives at least roughly coincident with the culture grouping.

CHRONOLOGICAL TYPES

In the preceding, we have assumed the same attitude as in the other initial classifications, *viz.*, treating all as if contemporaneous in origin. This is, of course, the only attitude to assume toward observations upon the living, but skeletons from burials may belong to widely separated periods. Recalling the conspicuous success of archæologists in establishing the sequence of cultures and the abundance of artifacts found in graves, it seems a matter of course that chronological types should be evident. The facts are that no such sequencing has been achieved, chiefly because the skeletal remains have not been studied to this end. Even-

CEPHALIC INDEX ACCORDING TO CULTURE AREAS

Cephalic Index	Eskimo	Mackenzie	North Pacific	Eastern Woodlands	Plains	California	Southwest	Mexico	Southeast	Guiana	Andean Highland	Patagonia	Eastern Brazil	Total
71				1										1
72	1			1										2
73				3									2	5
74													1	1
75	1			1		1			1			1		5
76					1			1					1	3
77	2			2	1				2			1	1	9
78		1		4	6		1			1			1	14
79				1		1		3	1		1		3	10
80			1		3			1	1		1		1	8
81			1		1				2	1	2	1		8
82				1	1						1			3
83		1	1	1		1	1			1				6
84		1	2		1		1	2	3			1		11
85								1				1		2
86				1		1					1			2
87											1			2
														92

tually such sequencing of skeletal types may be available. Some crude attempts have been made to contrast the historic and the prehistoric, as in eastern United States, where a long-headed type is believed to have preceded a less long-headed one. Again, in New Mexico, Arizona, and Utah, where some culture sequences are known, it has been assumed that the early Basket Makers were less round-headed than the Pueblos. However, these very tentative assumptions are about all that the literature offers us.

If, in the future, skeletons are found associated with extinct animals characteristic of the late Pleistocene age, these would constitute the early chronological types of man in

the New World. In 1932 a skeleton was found in Minnesota which Professor A. E. Jenks named Minnesota Man.²⁹ As interpreted by geologists, this find is post glacial, but still of respectable antiquity. In 1934 Professor Jenks announced another skeleton which he designated as Brown's Valley Man; this find was accompanied by artifacts reported as of Folsom and Yuma types. The interpretation of these finds is still a matter of controversy, so the significance of these discoveries rests with the future. Yet, there is agreement on one point; these skeletons are of the generalized Indian type.

Many other skeletal finds may be noted in the literature of anthropology, but their claims to antiquity have not been approved by the critical, so all the accepted evidence for the oldest men in the New World has so far been based upon artifacts. The most probable case is Minnesota Man, noted above. However, the one positive point resulting from the many controversies over the antiquity of the various skeletal finds is that whatever may be the age of the skeletons in question, they are of the same general type as the surviving New World native. This is consistent with our conclusions as to his homogeneity and probable single origin. On the other hand, it will not do to argue that unless we find skeletons that do differ from this general type, they cannot, therefore, be old. But as this controversy over the antiquity of man in the western world is not our present concern, we may accept the above conclusion in so far as it applies to the homogeneity of type. Under such conditions, the problem of antiquity shifts to the geological and faunal associations. We may anticipate, therefore, that future skeletal finds will belong to the New World type; but if we consider the data in other parts of this work, we must expect some of them to have a respectable antiquity.

While this point of view applies to the New World as a whole, it still remains possible that there have been changes

in the sub-types occupying some of the areas we have just designated. Something like this is suggested in the Mississippi Valley and the Atlantic States, where moderately long-headed peoples are seemingly followed by the round-headed. In Southwestern United States it is believed that the Basket Makers were rather long-headed. However, the stratigraphic relations of long-headed and round-headed peoples, respectively, are still vague. We probably have no good reason for expecting such chronological differences because of the general unity which appears to hold for the whole New World population; hence, the dating of skeletons must be according to the artifacts associated with them. Yet, our inquiry has not been in vain, for we have found that, whatever may ultimately prove to be the truth concerning the chronological relations of the skeletal material available for the study of aboriginal man, there cannot be the least doubt as to the general somatic homogeneity of the race and the place of its origin.

SUMMARY

The reader may be mystified by such statements as: a, in the New World variations in head and face form run about the same ranges in frequency as in the Old World; b, that there is an easily recognizable New World type to which all Indians and Eskimo alike conform; c, there have been no important changes in this New World type since man came across from Asia. Fig. 80 presents the geographical range of the so-called mongoloid branch of mankind. It is fair to assume that this wide continuous range results from the expansion of an original localized unit; the mongoloid strain dominating this unit was virile enough to absorb and submerge whatever strange peoples survived the extension of its frontiers. In the New World there may have been no predecessors; at least none have come to notice. The observed basic unity of this type, across Asia

and down to Cape Horn, itself suggests a stubborn heredity. Possibly these two characteristics explain the seeming contradiction of antiquity without important changes in type. On the other hand, the considerable range of variation observed in the New World may be due to inbreeding. The laws of genetics seem to justify the expectation that even a moderate degree of isolation for inbreeding groups tends to bring into prominence some of the disparate characters of remote origin through out-crossing. As the mongoloids expanded in Asia, they could have picked up some negroid and Caucasian blood. Once in the New World, scattering into local inbreeding groups, these submerged characters might, on occasion, become accentuated. Some anthropologists have called attention to negroid traces in many prehistoric New World skulls. If our assumptions are near the truth one need not be surprised at this. Even an australoid type is recognizable, especially in the Punin calvarium from Ecuador.³⁰ Since such traces appear in South Africa, in India, and southern South America, a remote australoid base to the proto-mongoloid line may be taken for granted. Yet, while this may account for the variables in New World man, these are secondary to the persisting mongoloid type. That once in the New World, the mongoloid did not revert more and more is probably due to at least two factors, the degree of dominance inherent in it and the frequent arrival of fresh blood from Siberia. We anticipate that future research will make these relations clearer.

1. Deniker, 1900. I, p. 292.
2. Posnansky, 1916. I.
3. Boas, 1895. I.
4. Jenks, 1916. I.
5. Jenks, 1916. I.
6. Hrdlicka, 1916. I.
7. Duckworth, 1915. I.
8. Deniker, 1900. I, p. 89.
9. Hrdlicka, 1920. I.

10. Sullivan, 1920. I.
11. Hellman, 1919. I.
12. Posnansky, 1916. I.
13. Ripley, 1899. I, p. 43.
14. Martin, 1928. I.
15. Boas, 1911. I.
16. Deniker, 1900. I.
17. Martin, 1928. I.
18. Martin, 1928. I.

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| 19. Deniker, 1900. I. | 25. Giddings, 1909. I. |
| 20. Martin, 1928. I. | 26. Osborn, 1910. I. |
| 21. Snyder, 1926. I. | 27. Matthew, 1915. I, p. 270. |
| 22. Thomson, 1899. I, pp. 125-128. | 28. Hrdlicka, 1916. I. |
| 23. Hrdlicka, 1915. I, p. 91. | 29. Jenks, 1936. I. |
| 24. Haddon, 1925. I. | 30. Sullivan and Hellman, 1925. I. |

CHAPTER XIX

NEW WORLD ORIGINS

THE aim of the preceding chapters has been to convey a general idea of the content of the science of anthropology in so far as it applies to the New World. The ultimate goal of investigation in this field in the New World is the discovery of the origin of the Indian and the causes and conditions leading to the development of his culture. Though thus simply stated, the problem is truly complex. We have seen what a great array of facts must be considered and how one must draw upon the resources of zoology, geography, and geology, before the various parts of the problem can be formulated for critical consideration. As to the origin of the New World man himself, we have achieved one point: *viz.*, that he migrated hither from Asia where his nearest relatives still reside. Yet, we are far from the truth as to the exact relationship between the Indian and the Asiatic, and have still much to learn as to his own subdivisions.

Now, with the main facts before us and recognizing that the differentiation of cultures is a historical phenomenon, we should be able to project the general outlines of man's career in the New World. Recalling our conclusion that the Indian came here from Asia at a relatively recent period, we find ourselves confronted with the question as to what elements of culture man brought with him when he crossed over to America. Even the casual reader will be impressed by the close general parallelism between the two halves of the world, and, it is this obvious fact more than anything

else, that has stimulated speculative writings upon the subject. Repeated efforts have been made to show that all the higher culture complexes of the New World were brought over from the Old, particularly from China or the Pacific Islands. Most of these writings are merely speculative and may be ignored, but some of the facts we have cited for correspondences to Pacific Island culture have not been satisfactorily explained. Dixon¹ has carefully reviewed this subject, asserting in general that among such traits as blow-guns, plank canoes, hammocks, betel chewing, head-hunting cults, the men's house and certain masked dances common to the New World and the Pacific Islands, there appears the tendency to mass upon the Pacific side of the New World. This gives these traits a semblance of continuous distribution with the Island culture. Yet it should be noted that these traits, as enumerated above, have in reality a sporadic distribution in the New World and that there are exceptions. On the other hand, there is no great *a priori* improbability that some of these traits did reach the New World from the Pacific Islands. Satisfactory proof of such may yet be attained, but such discoveries would not account for New World culture as a whole. Then there are abundant data to show that the Polynesians are recent arrivals in the Pacific;² in fact, Maya culture must have been in its prime when they were within striking distance of the American coast.

In the preceding discussions, we found evidences of a certain unity in the fundamentals of culture for all parts of the New World, and unless we find among these some fundamentals that are also conspicuous in the Old World, we need look no farther than the New for their place of origin. The Old World also has its fundamental traits, particularly the ancient cultures of Asia, but so far, few close parallels between these and those of the New have come to light. Again, the originality of many New World traits is apparent when our subject is viewed from the cultural

horizon of the Old World. It has been very aptly said that the fundamentals of Old World culture are expressed by the terms "cereals, cattle, plough, and wheel."³ Yet, what have we found in the New World that can be set down as specifically similar to these? We are left, therefore, little choice but to recognize that the cultures of the New World peoples were developed independently of the ancient centers of higher culture in the Old.

The old argument against such a conclusion was that the barbarous Indian was incompetent to develop the cultures of Yucatan and Peru. This view is now somewhat antiquated, but still lingers as a kind of intellectual reaction in the minds of modern Europeans. Perhaps back of it is a habit of thought, since in Old World culture, in which we ourselves live and think, fundamental traits are often found to have a single origin. For example, the horse, ox, wheat, glass, printing, gunpowder, etc., seem to have had each a single place of origin from which they were diffused. Yet, in contemplating New World culture we must not forget that the comparisons between the two hemispheres should be specific. It will not do, for instance, to say that because agriculture is found in both the Old and New Worlds one must have been derived from the other, for we are here dealing with a mere abstraction, like eating, writing, fishing, etc. The proper method is to examine the agricultural traits found in each hemisphere. Thus, one basic factor in agriculture is the development of specific food plants. Let us, therefore, compare the plants cultivated by the Indian with those grown in the Old World.

De Candolle⁴ has listed more than forty plants grown by the Indians whose wild ancestors were, without reasonable doubt, peculiar to the New World. On the other hand, the ancestors of the leading food plants of the Old World have been found peculiar to it. Thus, we find that each hemisphere developed agriculture by drawing upon its own

peculiar flora and that in consequence their seed lists had nothing in common before 1492. Now, when we consider the rapidity with which maize, tobacco, and other New World plants were taken up in the Old World after the memorable voyage of Columbus, it is scarcely conceivable that the peoples of the two hemispheres could ever have been in contact without exchanging some of their seeds, and certainly impossible to assume that the agriculture of the New World was directly derived from the Old.

But our case does not rest upon this one observation, for there are others of almost equal weight. The wheel is a fundamental concept in the Old World and clearly of great antiquity, but is singularly absent from the New World,⁵ even its spinners and potters failing to grasp the principle. The use of iron is another, though perhaps later, invention of the Old World that remained peculiar to it. However, the facts of cultivated plants and the wheel, which must be very ancient in origin, make a strong case for the peopling of the New World either at a very remote period or by wild tribes only, such as might arise from contact between the historic tribes of Alaska and Siberia.

On the other hand, the New World peoples did achieve some of the specific inventions of the Old; for instance, the making of bronze and casting gold, silver, copper, etc.; again, in certain methods of weaving and dyeing. It is sometimes objected that the knowledge of these traits could have been handed over or relayed from southern Asia to Mexico by the intervening wild tribes; but this seems fanciful, for while we do find certain traits spread over adjacent parts of the two continents, as the sinew-backed bow, the bow-drill, the magic flight myth, the opium type of smoking, all of which are considered as of Asiatic origin, their distribution is continuous from Alaska downward, and fades out before we reach the southern continent. Further, it has been assumed that the ideas underlying a trait could be carried

along as part of a myth and so pass from one of the higher cultures of Asia to Mexico by way of Siberia and Alaska. There is no *a priori* improbability in this notion that specific ideas can be carried from tribe to tribe as constituent parts of mythical tales. The difficulty is that notwithstanding our very complete knowledge of typical tribal mythologies, we are so far unable to find examples of such extensive transmissions of the process concepts underlying specific culture traits. As we have noted under Mythology, myths do seem to have carried a few mythical conceptions from the Old World to the New, but these have remained as mere parts of tales and do not function in practical life.

Hence, the general condition for any interpretation of Old and New World relations is the full recognition that their great culture centers were well isolated by a complex chain of wilder hunting peoples and that direct contact between the two was impossible without modern means of transportation. Only such traits could, therefore, filter through from one to the other as were assimilated by these more primitive tribes. When we consider their great number and the diversity of their speech, we realize that Mexico was completely isolated from China in agriculture, metal work, and similar arts, but not necessarily so in simpler traits like the sinew-backed bow. The proof of independent development thus rests largely in chronological and environmental relations.

We must not overlook one difficulty in dealing with culture similarities between the New World and the Old; viz., the proof that these similarities are real. In 1915 certain well known elephant-like figures found in Maya sculptures were heralded as proof of direct connection between India and Mexico. Special students⁶ in this field doubt the reality of the similarity between these figures and southern Asiatic drawings of elephants, because those who have studied the actual Maya sculptures instead of the sketches

made by earlier observers, find proof that another creature was in the artist's mind. When we are dealing with the conventionalized drawings from the New World and the Old, it can scarcely be expected that the mere objective similarity between a few of them is proof of their identity in origin. Other check data must be appealed to before even a useful working hypothesis can be formulated. Yet, if it should ultimately turn out that a stray vessel did drift ashore in Mexico and land a sculptor who created a new art motif, this would be a mere incident in the culture history of the New World. Further research into the chronology of archæological remains ought to show just how abruptly this fancied elephant motif appeared and at what relative period. The basis for the real solution of the problem may be expected in such chronological data.

We must now take leave of our brief review of culture in the New World. We have found the highest centers of culture in Mexico and Peru to be not really unique growths, but to possess many of the fundamental traits common to the wilder folk in the marginal areas of both continents. New World culture is thus a kind of pyramid whose base is as broad as the two Americas and whose apex rests over Middle America. We have found no just ground for assuming that the culture of the Maya was projected into the New World from the Old, where it rested as an isolated replica of cultures beyond the Pacific. That influences of various kinds did reach the New World from the Old is apparent, but each of these must, upon its own merits, particularly as to its chronology, be subjected to the most exacting investigation.

However, the discovery of New World origins is not merely a problem in culture. Language also is regarded as a reliable index to origin. Some similarities between Tibetan and Athapascan, Melanesian and Hokan, Australian and Fuegian, etc., have been suggested. Long ago Duponceau

saw certain resemblances between the languages of east Siberia and American Indian languages in general. So far, none of these resemblances have been regarded as sufficient to indicate more than vague relationships. As we have seen, the New World itself presents such a mystifying array of languages that it would seem reasonable to expect that when colonies were planted here by Old World cultures, such colonization would have introduced Old World tongues. Yet, so far, there is not a trace of direct intrusion. New research may clear up this confusion, but as the case now stands, language data suggest a reasonable antiquity for the peopling of North America.

Finally, there is the question of blood. Our review of New World somatic characters revealed the essential unity of the Indian population. It is also clear that there are affinities with the mongoloid peoples of Asia. Hence, we are justified in assuming a common ancestral group for the whole mongoloid-red stream of humanity. We have already outlined the reasons for assuming the pristine home of this group to be in Asia, but when it comes to locating the precise cradleland of this parent group, we must proceed with caution. This is, however, not of prime importance, for if we start with the known facts, the present distribution of the mongoloid-red stem, we note that it concentrates in the colder northern halves of both hemispheres, where the cultures of its units are primitive, but that in each case its southern outposts developed complex cultures. The New World branch can claim originality for its high center and while it is clear that the ancient Chinese center was stimulated by non-mongoloid centers, the pioneer students of Chinese origins have already presented a strong brief for their priority in many Old World inventions.⁷ Thus, the future may lead to the opinion that inherent in this mongoloid stem was a germ of originality which blossomed forth wherever the environment permitted, and we may be able,

by contrasting these two independent cultures—the ancient Chinese and the Maya—with those of southern Asia and Europe, to arrive at last at the knowledge of elements peculiar to both. What these may be, we can but guess, but there seems to be a similarity between the Indians and the Asiatics in the weakness for loosely coordinated social groups, failure to develop nationalism, and relatively greater regard for tradition. Returning to our subject, we may note that the geographical position of these two centers of higher cultures on the frontiers of the extended swarming ground of the mongoloid-red stem, one of which could not have been borrowed from the other, necessitates the assumption of a northern cradleland and an expansion into more favorable environments. It also presupposes a main horde of the mongoloid-red peoples with a culture not materially different from that of the great mass of wilder North Asiatic and American tribes known to history. Like a great crescent this horde stretched from Cape Horn, through Alaska, across Asia and beyond to the shores of the Baltic and the Mediterranean. It appears, in the main, as a virile horde of hunting and fisher folk most at home in cold, elevated or semi-arid lands. Among other traits, we find the main body characterized by tailored skin clothing, the sinew-backed bow, the snowshoe, the sled, etc. These are all fairly primitive characters; yet, wherever the outposts of this great horde met with favorable uplands they developed agriculture and other complex traits. It seems, therefore, that the solution of our New World problem lies as much in the heart of Asia as in Mexico or Peru. But, reverting once more to this great mongoloid-red horde, we may ask from what sources in its primitive cultures sprang the impulses that produced the two great cultures of ancient China and Yucatan? In the New World, the fundamentals of Maya culture are found among the wilder folk; in Asia there are also evidences that Chinese culture sprang from

the primitive heritage of the original mongoloid group settling in the valley of the Yellow River.⁸ And while it is true that the most fundamental traits in Old World culture can not be ascribed to these same early Chinese, they did, nevertheless, achieve great originality in the invention of new traits, many of which are now elements of modern culture. Hence, unless we return once more to the old theory of the fall of man, we must look upon these two great cultural achievements as the special contributions of the mongoloid-red peoples to the culture of mankind.

Now, as a final conclusion to this volume on the man of the New World and his culture, we beg the reader's indulgence in the formulation of an hypothetical statement. The New World received a detachment of early mongoloid peoples at a time when the main body had barely developed stone polishing. That this was contemporaneous with the appearance of stone polishing in Europe does not necessarily follow, for future research in Asia may show it to have been much earlier. The hunters who killed bison at Folsom and those who hurled spears at the mammoth floundering in a pit at Clovis may not have been the first immigrants from the northwest, but they belonged to the primitive nomadic stratum which seems to underlie the aboriginal cultures of the New World. Their mongoloid kin, remaining in Central Asia, received culture stimuli from the south and east, urging them to greater achievements, but in the New World these primitive hunters had only themselves. Yet, in the course of time, increase in numbers and the development of sub-social groups led to considerable varieties of culture. Some of the traits probably brought from the mother-land are the firedrill, stone chipping, twisting of string, the bow, throwing stick, the harpoon, simple basketry and nets, hunting complexes, cooking with stones in vessels of wood, bark, or skin, body painting, and perhaps tattooing, and the domestication of the dog. Not all of these came in at the

beginning, for there are archæological evidences suggesting that the bow and the dog came relatively late. Independently, the New World developed agriculture, pottery, the higher types of basketry and cloth weaving, the working of the softer metals, and the manufacture of bronze. The progress in astronomical knowledge and the fine arts compares favorably with that achieved by the early Asiatics. Yet, in all, we see the marks of originality which are alone sufficient evidence of their independent origin.

The centers of civilization in the New World were the highlands of Mexico and western South America which, as they developed, reacted to the stimulus of their more backward brothers in other parts of the land in much the same fashion as did the different groups of mongoloid peoples in Asia. One of the significant points in our discussion has been the identification of the fundamental widely diffused complexes in the cultures of the New World, many of which seem to center in the Mexican and Andean regions of higher civilization and from which their respective radiations are often apparent. The more recent studies of ancient Chinese culture show that a somewhat parallel condition existed in Asia. Apparently then, in the New World, we did have an isolated people who did not travel the road to higher cultures as rapidly as their relatives in Asia, the connection between whose centers of development has long been broken by climatic changes and later almost completely blocked by hordes of primitive hunter and fisher folk. We can only speculate as to what a few more thousand years of this freedom would have done for the New World, for in the sixteenth century a calamity, which has no exact parallel in history, befell the New World. A militant foreign civilization, fired by a zeal not only to plunder the material treasures of mankind, but to seize the very souls of men in the name of its God, fell upon the two great centers of aboriginal culture like a thunderbolt from a clear sky. The blow

was mortal. But the man of the New World went down fighting. Though his feeble survivors still continue the struggle in a few distant outposts, the first great onslaught that annihilated the Aztec and the Inca marks the end of our story. In this volume we have been concerned only with the history of a race and a culture of which the aboriginal city-states of Mexico and Peru were the culmination. As we look back upon the long and tortuous career of man in the New World, comprehend his crude equipment as he first set foot upon the land, and pass in review his later achievements, we cannot but regret that the end came so suddenly.

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|---------------------------------|-------------------------------|
| 1. Dixon, 1912. I; 1928. I. | 5. Tylor (no date); Means, |
| 2. Haddon, 1911. I. | 1916. I. |
| 3. Laufer, 1914. I. | 6. Smith, G. Elliot, 1924. I. |
| 4. De Candolle, 1902. I; Sauer, | 7. Laufer, 1914. I. |
| 1936. I. | 8. Laufer, 1914. I. |

APPENDIX
LINGUISTIC TABLES AND BIBLIOGRAPHY

LINGUISTIC STOCKS OF THE UNITED STATES AND CANADA

AFTER J. W. POWELL

IN this compilation we have thought best to be conservative. As noted in the text, claims have been put forward for the consolidation of several stocks, but since these are still under discussion, and some of the leading American linguists are not convinced, we think best to follow the old classification. The chief changes proposed are the consolidation of the Piman, Shoshonean, and Nahuatlan stocks; the transfer of Wishoskan (Wiyot) and Weitspekan (Yurok) to the Algonquian; the combination of Wintun (Copehan), Maidu (Pujunan), Yokuts (Mariposan), Moquelumnan (Miwok), and Costanoan under the name Penutian; and the grouping of Shasta, Chimariko, Quoratean (Karok), Pomo (Kulana-pan), Esselenian, and Yuman under the name Hokan.

The population data according to linguistic stocks are from the official reports for 1910. The total population was 383,151. Neither the U. S. Census of 1920 nor 1930 gives population by linguistic stocks, so we use the 1910 data to show the relative strength of each language group. There seem to have been no marked relative changes since that date. The U. S. Census for 1930 records 353,380; Canada reports 108,012.

I. ALGONQUIAN, OR ALGONKIN (90,975):

- A. *Blackfoot*. 1. Piegan. 2. Blood. 3. North Blackfoot.
- B. *Cheyenne*. 1. Northern and Southern Cheyenne. 2. Probably the Sutaio (extinct).
- C. *Arapaho*. 1. Northern and Southern Arapaho. 2. Gros Ventre (Atsina).
- D. *Eastern-Central Division*:
 - a. Cree-Montagnais Type. 1. Cree. 2. Montagnais. 3. Naskapi. 4. Menomini. 5. Sauk and Fox. 6. Kickapoo. 7. Shawnee. 8. Abnaki-Micmac Type (Abnaki,

Pennacook, Micmac, Malecite, Passamaquoddy, and Penobscot).

- b. Ojibway Type. 1. Ojibway. 2. Potawatomi. 3. Ottawa. 4. Algonkin. 5. Peoria. 6. Natick. 7. Delaware. 8. Illinois. 9. Miami.
- c. Massachuset Type. 1. Massachuset. 2. Narraganset. 3. Wampanoag. 4. Nauset. 5. Montauk. 6. Nipmuk (possibly). 7. Connecticut River Indians (possibly).
- d. Uncertain Type. 1. Unami. 2. Unalachtigo. 3. Munsee. 4. Wappinger. 5. Mahican. 6. Pequot.
- e. Unclassified. 1. Nanticoke. 2. Conoy. 3. Powhatan. 4. Weapemeoc. 5. Secotan. 6. Pamunkey. 7. Piankashaw. 8. Mattapony. 9. Chickahominy.

2. ATHAPASCAN (53,212):

A. *Northern Group:*

- a. Highland Tribes. 1. Loucheux. 2. Sekani. 3. Carrier. 4. Babine. 5. Nahane (Tahltan, Taku, Kaska). 6. Chilkotin.
- b. Lower Yukon. 1. Kaiyukhotana. 2. Koyukukhotana. 3. Knaiakhotana. 4. Unakhotana.
- c. Upper Yukon. 1. Tenankutchin. 2. Tennuthkutchin. 3. Kutchakutchin. 4. Natsitkutchin. 5. Vuntakutchin. 6. Tukkutchkutchin. 7. Hankutchin. 8. Tutchone Kutchin. 9. Tatlitkutchin. 10. Kwitchakutchin.
- d. Mackenzie Tribes. 1. Slavey. 2. Chipewyan. 3. Dogrib. 4. Hares. 5. Yellow Knives.
- e. Beaver.
- f. Sarsi.
- g. Ahtena.

B. *Pacific Coast Group:*

- a. Hupa Type. 1. Hupa. 2. Whilkut.
- b. Kato Type. 1. Kato. 2. Nongal (Saiaz). 3. Wailaki. 4. Sinkyone. 5. Metolle (?).
- c. Tolowa Type. 1. Tolowa. 2. Shasta Costa. 3. Tututni. 4. Galise Creek.
- d. Coquille.
- e. Umpqua.
- f. Tlatskanai.

C. *Southern Group:*

- a. San Carlos Type. 1. San Carlos Apache. 2. White Mountain Apache. 3. Chiricahua Apache. 4. Tonto. 5. Coyotero. 6. Mescalero Apache. 7. Navajo.
- b. Jicarilla Type. 1. Jicarilla Apache. 2. Kiowa Apache. 3. Lipan Apache.

3. ATTACAPAN (extinct):
 - A. *Eastern Dialect.*
 - B. *Western Dialect.*
4. BEOTHUKAN (extinct; some reason for assuming it to be Algonquian).
5. CADDOAN (1863):
 - A. *Northern Group.* 1. Arikara
 - B. *Middle Group:*
 - a. Pawnee Type. 1. Skidi. 2. Chaui. 3. Kitkahaxki. 4. Pitahauirata.
 - C. *Southern Group.* 1. Caddo. 2. Wichita. 3. Kichai. 4. Tawakoni. 5. Waco.
6. CHIMAKUAN (306):
 - A. *Chimakum.*
 - B. *Quileute.* 1. Hoh.
7. CHIMARIKAN, or CHIMARIKO (31):

Member of the proposed Hokan.
8. CHIMMESYAN (2155):
 - A. *Tsimshian.*
 - B. *Kitksan.*
 - C. *Niska.*
- CHINOOKAN (897):
 - A. *Upper Chinook.* 1. Wasco. 2. Wishram. 3. Kathlamet. 4. Klackamas.
 - B. *Lower Chinook.* 1. Clatsop. 2. Chinook proper.
10. CHITIMACHAN, or CHITIMACHA (69).
11. CHUMASHAN (38):
 - A. *San Luis Obispo.*
 - B. *Central Group.* 1. San Buenaventura. 2. Santa Barbara. 3. Santa Ynez.
 - C. *Island Group.* 1. Santa Cruz.
12. COAHUILTECAN, or CARRIZO (extinct):
 - A. *Pakawa.*
 - B. *Comecrudo.*
 - C. *Cotoname.*
13. COSTANOAN (17):
 - A. *Northern Division.* 1. San Francisco. 2. San Jose. 3. Santa Clara. 4. Santa Cruz.
 - B. *Southern Division.* 1. San Juan Bautista. 2. Soledad. 3. Monterey. (Members of the proposed Penutian.)

14. ESKIMAUAN (30,000?):

A. *Eastern Eskimo Dialects*:

- a. Greenland Eskimo. 1. Upernavik. 2. Disco Bay. 3. Ammassalik. 4. Oommannaq Fiord. 5. Smith Sound.
- b. Baffin Land.
- c. Labrador.

B. *Probable Central Eskimo Dialects*. 1. West shore of Hudson Bay. 2. Southampton Island. 3. Melville Peninsula. 4. Boothia Peninsula. 5. Part of Baffin Land. 6. Victoria Island.C. *Western Eskimo Dialects*. 1. Kadiak Island. 2. Bristol Bay. 3. Mouth of Yukon River. 4. Norton Sound. 5. Kotzebue Sound. 6. Point Barrow. 7. Mouth of Mackenzie River.D. *Aleut*. 1. Unalaska. 2. Atkans.

15. ESSELENIAN (extinct):

Member of the proposed Hokan.

16. HAIDA (961):

- A. *Masset Dialect*. 1. Howkan. 2. Klinkwan. 3. Kasaan.
- B. *Skidegate Dialect*.

HOKAN:

Proposed name for the combined Chimarikan, Esselenian, Shastan, Quoratean (Karak), Pomo (Kulanapan), and Yuman stocks.

17. IROQUOIAN (50,160):

- A. *Huron, or Wyandot*.
- B. *Tionontati*.
- C. *Attiwendaronk, or Neutrals*.
- D. *Conkhandeenrhonon*.
- E. *Iroquois*. 1. Mohawk. 2. Oneida. 3. Onondaga. 4. Cayuga. 5. Seneca. 6. Tuscarora.
- F. *Conestoga, or Susquehanna*.
- G. *Erie*.
- H. *Nottaway*.
- I. *Meherrin*.
- J. *Cherokee*. 1. Elati. 2. Middle Cherokee. 3. Atali.
- K. *Onnontioga*.

18. KALAPOOIAN (106):

- A. *Kalapooia, Santiam, Lakmiut, Ahantsayuk, Mary's River Che-penafa?*.
- B. *Yamhill, Atfalati*.
- C. *Yonkalla*.
- D. *Chelamela*.

19. KARANKAWA (extinct).
20. KERESAN (4027):
 - A. *Western Villages*. 1. Acoma. 2. Laguna.
 - B. *Eastern Villages*. 1. Cochiti. 2. Sia. 3. Santa Ana. 4. San Felipe. 5. Santo Domingo.
21. KIOWAN, or KIOWA (1126).
22. KLAMATH (978):
 - A. *Modoc*.
 - B. *Klamath*.
23. KUSAN (93):
 - A. *Melukitz*.
 - B. *Anasitch*.
 - C. *Mulluk*.
 - D. *Nasumi*.
24. KUTENAI (1091):
 - A. *Upper Kutenai*. 1. Akiskemikinin. 2. Akamnik. 3. Akane-kunik. 4. Akiyenik.
 - B. *Lower Kutenai*.
25. MAIDU, or PUJUNAN (1100):

Three dialects: Northwestern, Northeastern, Southern.
Members of the proposed Penutian.
26. MOQUELUMNAN, or MIWOK (699):
 - A. *Coast Dialects*. 1. Marin, or Southern Coast. 2. Bodega, or Western Coast. 3. Lake, or Northern Coast.
 - B. *Interior Dialects*:
 - a. Plains, or Northwestern.
 - b. Sierra Dialects. 1. Amador. 2. Tuolumne. 3. Mariposa.
(Members of the proposed Penutian.)
27. MUSKHOGEAN (29, 191):
 - A. *Muskhogeian Proper*:
 - a. Southern Division: 1. Hitchiti Group: Hitchiti, Mikasauki, Sawokli. 2. Apalachee. 3. Yamasi (?). 4. Alabama Group: Alibamu, Koasati, Tuskegee. 5. Choctaw Group: Choctaw; Northern Choctaw, Sixtowns Choctaw; Chickasaw.
 - b. Northern Division. 1. Muskogee proper, or Creek: Upper Creek, Lower Creek, Seminole.
 - B. *Natchez Dialects*. 1. Avoyel, Taensa.

PENUTIAN.

Proposed name for the combined Wintun (Copehan), Maidu (Pujunan), Yokuts (Mariposan), Moquelumnan (Miwok), and Costanoan stocks.

28. PIMAN (8607):

A. *Pima*.

B. *Papago*.

(Probably a member of the proposed Uto-Aztecan, or Nahuatlán family—see following table.)

29. POMO, or KULANAPAN (1193):

There are seven dialects designated as Northern, Central, Eastern, Southwestern, Southern, Southeastern, and Northeastern, all members of the proposed Hokan.

30. QUORATEAN, or KAROK (775):

Member of the proposed Hokan.

31. SALINAN (16):

A. *San Antonio*.

B. *San Miguel*.

32. SALISHAN (18,097):

A. *Interior Dialects*:

a. Lillocet.

b. Ntlakyapamuk (Thompson Indians).

c. Shuswap.

d. Okinagan. 1. Colville. 2. Nespelim, or Sanpoil. 3. Semjextee.

e. Flathead. 1. Spokane. 2. Kalispel, or Pend d'Oreille. 3. Salish, or Flathead.

f. Cœur d'Alêne.

g. Columbia Group. 1. Pisquow, or Wenatchi. 2. Sinkiuse. 3. Methow.

B. *Coast Dialects*:

a. Bella Coola.

b. Comox Group: (a) Comox: 1. Comox. 2. Eëksen. 3. Homalko. 4. Kaäke. 5. Kakekt. 6. Seechelt. 7. Sliammon. 8. Tatpoös; (b) Puntlatsh: 1. Hwawwatl. 2. Puntlatsh. 3. Saämen.

c. Cowichan Group. (a) Vancouver Island: 1. Clemclemalats. 2. Cowichan. 3. Hellelt. 4. Kenipsim. 5. Kilpanlus. 6. Koksilah. 7. Kulleets. 8. Lilmalche. 9. Malakut. 10. Nanaimo. 11. Kwantlin. 12. Penelakut. 13. Quamichan. 14. Siccameen. 15. Sno-

nowas. 16. Somenos. 17. Tateke. 18. Yekoloas; (b) Fraser Valley: 1. Chehalis. 2. Chilliwack. 3. Coquitlam. 4. Ewawoos. 5. Katsey. 6. Kelatl. 7. Kwantlen. 8. Matsqui. 9. Musqueam. 10. Nehaltmoken. 11. Nicomen. 12. Ohamil. 13. Pilalt. 14. Popkum. 15. Samahquam. 16. Scowlitz. 17. Sewathen. 18. Siyita. 19. Skwawalooks. 20. Snonkweametl. 21. Squawtits. 22. Sumass. 23. Tsakuam.

d. Squawmish Group. 1. Squawmish. 2. Nooksak.

e. Songish Group. 1. Clallam. 2. Lummi. 3. Lkuñgen. 4. Samish. 5. Sanetch. 6. Semiahmoo. 7. Songish. 8. Sooke.

f. Nisqualli Group. (a) Nisqualli: 1. Dwamish. 2. Puyallup. 3. Skagit. 4. Snoqualmu, or Snoquamish. 5. Squaxon; (b) Snohomish.

g. Twana Group. 1. Twana. 2. Sailupsun.

h. Chehalis Group. 1. Quinault. 2. Quaitso. 3. Humptulips. 4. Lower Chehalis. 5. Satsop. 6. Upper Chehalis. 7. Cowlitz.

i. Tillamook. 1. Tillamook, or Nestucca. 2. Siletz.

33. SHAHAPTIN (4391):

A. *Klikitat*.

B. *Nez Percé*.

C. *Paloos*.

D. *Topinish*.

E. *Umatilla*.

F. *Wallawalla*.

G. *Warm Springs*.

H. *Yakima*.

34. SHASTAN (1578):

A. *Shasta*.

B. *Konomihu*.

C. *New River*.

D. *Okwanuchu*.

E. *Achomawi*. 1. Astakiwi. 2. Atuami. 3. Chumawi. 4. Hantiwi. 5. Humawhi. 6. Ilmawi.

F. *Atsugewi (Pakamali)*.

(Members of the proposed Hoka.)

35. SHOSHONEAN (16,842):

A. *Pueblo Group*. 1. Hopi.

B. *Plateau Group*:

a. Ute-Chemehuevi. 1. Ute. 2. Paiute of Southern Nevada. 3. Chemehuevi. 4. Kawaiisu. 5. Uintah Ute. 6. Southern Ute. 7. Uncompahgre.

b. Shoshoni-Comanche Group. 1. Shoshoni. 2. Comanche. 3. Koso (Panamint).

- c. Mono-Paviotso. 1. Monachi, or Mono. 2. Northern Paiute, or Paviotso. 3. Snake. 4. Bannock.
- C. *Kern River Group*. 1. Tübatulabal. 2. Bankalachi.
- D. *Southern California Group*:
 - a. Serrano. 1. Serranos. 2. Gitanemuk.
 - b. Gabrielino. 1. Mission of San Gabriel. 2. Mission of San Fernando.
 - c. Luiseño-Cahuilla. 1. Luiseño. 2. Juaneño. 3. Cahuilla. 4. Agua Caliente.
 (Probably a member of the proposed Uto-Aztecan, or Shoshonean-Nahuatlan family.)

36. SIOUAN (40,801):

A. *Dakota-Assiniboin*:

- a. Eastern, or Santee Dakota. 1. Mdewakanton. 2. Wahpekute. 3. Sisseton. 4. Wahpeton.
- b. Yankton.
- c. Yanktonai.
- d. Teton. 1. Brulé. 2. Oglala. 3. Sans Arc. 4. Blackfoot. 5. Miniconjou. 6. Two-Kettle. 7. Hunkpapa.
- e. Assiniboin. 1. Stoney. 2. Turtle Mountain Sioux.
- B. *Dhegiha*. 1. Kansa. 2. Omaha. 3. Osage. 4. Ponca. 5. Quapaw.
- C. *Chiwere*. 1. Iowa. 2. Missouri. 3. Oto. 4. Winnebago.
- D. *Mandan*.
- E. *Hidatsa*. 1. Crow. 2. Hidatsa.
- F. *Biloxi*. 1. Biloxi. 2. Ofo.
- G. *Eastern*. 1. Catawba. 2. Tutelo. 3. An indefinite number of extinct tribes.

37. SIUSLAW (7):

- A. *Siuslaw*.
- B. *Lower Umpqua, or Kuitc*.

38. TAKELMA (1):

- A. *Takelma*.
- B. *Upper Takelma*.

39. TANOAN (3140):

- A. *Tiwa*. 1. Taos. 2. Picuris. 3. Sandia. 4. Isleta. 5. Isleta del Sur. 6. Piro (extinct).
- B. *Towa*. 1. Jemez. 2. Pecos (extinct).
- C. *Tewa*. 1. San Juan. 2. Santa Clara. 3. San Ildefonso. 4. Nambe. 5. Pojoaque. 6. Tesuque. 7. Hano.

40. TIMUCUAN (extinct).

41. TLINGIT, or KOLUSCHAN (4458):

- A. *Tlingit*. 1. Auk. 2. Chilkat. 3. Henya. 4. Huna. 5. Kake.
6. Kuiu. 7. Sanyakoan. 8. Sitka. 9. Stikine. 10. Sumdum.
11. Taku. 12. Tongas. 13. Yakutat.
B. *Tagish*.

42. TONKAWA (42):

- A. *Tonkawa*. C. *Mayeye*.
B. *Ervipiame*. D. *Yojuane*.

43. TUNICAN (43):

- A. *Tunica*. D. *Tioux*.
B. *Koroa*. E. *Grigra*.
C. *Yazoo*.

44. UCHEAN (78):

- A. *Yuchi*.

UTO-AZTECAN:

Name proposed for the combined Nahuatlan, Piman, and Shoshonean stocks.

45. WAILATPUAN (329):

- A. *Cayuse*. B. *Molala*.

46. WAKASHAN (4538):

- A. *Nootka*.
B. *Kwakiutl*:
a. Haisla Dialect. 1. Kitamat. 2. Kitlope.
b. Heiltsuk Dialect. 1. Bellabella. 2. China Hat. 3. No-huntsitk. 4. Somehulitk. 5. Wikeno.
c. Kwakiutl. (a) Koskimo: 1. Klaskino. 2. Koprino. 3. Koskimo. 4. Quatsino; (b) Nawiti: 1. Nakomgilisala. 2. Tlatlasikoala; (c) Kwakiutl: 1. Awaitlala. 2. Goasila. 3. Guauaenok. 4. Hahuamis. 5. Koeksotenok. 6. Kwakiutl. 7. Lekwiltok. 8. Mamalelekala. 9. Nakoatok. 10. Nimkish. 11. Tenaktak. 12. Tlauitsis. 13. Tsawatonok.

47. WASHOAN (819):

- A. *Washo*.

48. WEITSPEKAN, or YUROK (668):

- A. *River Dialects*.
B. *Coast Dialects*.

49. WINTUN, or COPEHAN (710):

A. *Northern Division*, or Wintun.B. *Southern Division*, or Patwin.

(A member of the proposed Penutian.)

50. WISHOSKAN, or WIYOT (152):

(Possibly Algonquian.)

51. YAKONA (55):

A. *Yaquina*.B. *Alsea*.

52. YANAN (39):

A. *Northern Yana*.B. *Central Yana*.C. *Southern Yana*.D. *Yahi*.

53. YOKUTS, or MARIPOSAN (533):

Yokuts:

(According to Kroeber there are seven dialectic groups with a total of about fifty tribes, all members of the proposed Penutian.)

54. YUKIAN (198):

A. *Yuki proper*.B. *Coast Yuki*.C. *Huchnom*.D. *Wappo*.

55. YUMAN (4279):

A. *Eastern Group*. 1. Havasupai. 2. Walapai. 3. Tonto. 4. Yavapai.B. *Central Group*. 1. Mohave. 2. Yuma. 3. Maricopa. 4. Diegueño. 5. Cocopa.C. *Lower California Group*. 1. Kiliwi and Santo Thomás. 2. Cochimí. 3. Waikuru.

(Members of the proposed Hokan.)

56. ZUÑIAN, or ZUÑI (1667).

LINGUISTIC STOCKS OF MEXICO AND
CENTRAL AMERICA

The following tabulation has been compiled after Thomas and Swanton (Bulletin 44, Bureau of American Ethnology). As will be noted in the text of these authors, the place of many groups is far from certain so that this classification is not so definite as the preceding. It should rather be taken as the first preliminary lay-out of the subject.

1. ATHAPASCAN (See preceding Table):
 - A. *Apache*.
 - B. *Toboso*.
2. CHIAPANECAN:

A. <i>Chiapaneco</i> .	C. <i>Dirian</i> .
B. <i>Mangue (Cholulteca)</i> .	D. <i>Orotinan</i> .
3. CHIBCHAN (See South American Table):

A. <i>Guatuso</i> .	D. <i>Talamanca</i> .
B. <i>Vota</i> , or <i>Boto</i> .	E. <i>Guaymie</i> .
C. <i>Guelare</i> .	F. <i>Doraskean</i> .
4. CHINANTECAN.
5. CUNAN (See South American Table):
 - A. *San Blas*.
6. HUAVEAN (probably Zoquean).
7. JANAMBRIAN:
 - A. *Pisone* (extinct).
 - B. *Xanambre* (extinct).
8. JICAQUEAN:
 - A. *Xicauque*.
9. JINCAN:

A. <i>Xinca</i> .	C. <i>Jupillepeque</i> .
B. <i>Sinacanta</i> .	D. <i>Jutiapa</i> .
10. LAGUNEROS.
11. LENCAN.
12. MAYAN:

A. <i>Huastec</i> .	K. <i>Mam</i> .
B. <i>Maya</i> . 1. <i>Lacandone</i> . 2. <i>Itza</i> (Peten). 3. <i>Mopan</i> .	L. <i>Ixil</i> .
C. <i>Chontal</i> .	M. <i>Aguacateca</i> .
D. <i>Tzotzil</i> .	N. <i>Kiche</i> .
E. <i>Chol</i> .	O. <i>Cakchiquel</i> .
F. <i>Chañabal</i> .	P. <i>Tzutuhil</i> .
G. <i>Chicomucelteca</i> .	Q. <i>Uspanteca</i> .
H. <i>Motozintleca</i> .	R. <i>Kekchi</i> .
I. <i>Chuje</i> .	S. <i>Pokonchi</i> .
J. <i>Jacalteca</i> .	T. <i>Pokomam</i> .
	U. <i>Chorti</i> .

13. MATAGALPAN:

- A. *Matagalpa*.
- B. *Cacaoopera*.
- C. *Lislique*.

14. MOSQUITOAN.

15. NAHUATLAN:

- | | |
|---|--|
| A. <i>Piman</i> (See preceding Table). | H. <i>Cora</i> . |
| 1. Pima Alto. 2. Pima Bajo. | I. <i>Huichol</i> . |
| 3. Pima Bamoa. 4. Potlap-
igua. 5. Tepehuane villages. | J. <i>Tepecano, Teule, Caxcan,</i>
<i>Tecuexe</i> . |
| B. <i>Opata</i> . 1. Eudeve. 2. Jova, or
Ova. | K. <i>Concho</i> (extinct). |
| C. <i>Tarahumare</i> . | L. <i>Zacateco</i> . |
| D. <i>Seri</i> . | M. <i>Guachichile</i> . |
| E. <i>Yaqui</i> . 1. Mayo. 2. Tehueco. | N. <i>Nio</i> (extinct). |
| 3. Yaqui. | O. <i>Aztec</i> . |
| F. <i>Zoe, Baimena</i> . 1. Tepehue
and Tepehuane (extinct). | P. <i>Pipil</i> . |
| G. <i>Acaxee</i> (extinct?). 1. Acaxee. | Q. <i>Niquiran</i> . |
| 2. Jijinæ (Xixime). 3. Sa-
baibo. 4. Teloca. | R. <i>Sigua</i> . |

16. OLIVEAN.

17. OTOMIAN:

- | | |
|---------------------|---------------------|
| A. <i>Mazahua</i> . | C. <i>Pame</i> . |
| B. <i>Otomi</i> . | D. <i>Pirinda</i> . |

18. PAKAWAN (Coahuiltecan).

19. PAYON.

20. SUBTLABAN (Maribi).

21. TAMAULIPECAN.

22. TARASCAN.

23. TEQUISTLATECAN.

24. TOTONACAN:

- A. *Totonac*.
- B. *Tepehua*.

25. ULVAN.

26. WAICURIAN:

- A. *Waicuri*.
- B. *Pericu*.

27. YUMAN (See preceding Table).

28. ZAPOTECAN:

A. *Amishgo*.

B. *Chatino*.

C. *Chochó*.

D. *Cuicateco*.

E. *Mazateco*.

F. *Mixteco*.

G. *Trike*.

H. *Zapoteco*.

29. ZOQUEAN:

A. *Mixe*.

B. *Popoloco*.

C. *Tapachula*.

D. *Zoque*.

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INDEX

- Abipones, 137, 251, 252-253
- Aboriginal, inventions, 138; life, complexity of, 132
- Abrading, pebbles showing process, 120
- Acia niopo* berry, snuff powder, 27
- Accent, stress, in American phonetics, 337
- Acorn, area, 11; bread, 11, 227; preparation, for food, 11
- Adena mound, 276
- Adultery, punishment for, 188
- Adze, distribution of, 124; Iroquoian area, 270
- Africa, tales from, in New World mythology, 211
- Age, determination by distribution, 315, 316, 320; societies, men's, 173-174
- Aged, treatment of, 189-190
- Agricultural, areas, 12-19; period, pre-pottery, 319-320; products, Amazon Basin, 18; products, Chibcha peoples, 17; products, Ecuador, 17; products, Inca, 17-18; products, Pueblo peoples, 16; rituals, 196
- Agriculture, aboriginal, 318-320; Amazon Basin, 18; Amazon tribes, 239; area of intensive, 2, 3, 14, 16, 319; Chibcha area, 17, 247-249; control of, by Inca and Nahua, 186; cultural differences in Colombia, Ecuador, and Peru, 17-18; diffusion of, 24-25; distribution, 25, 319; Eastern Woodland Area, 237, 238-239; extensive, Maya, 245; guanaco area, 251; high organization in Nahua and Maya areas, 16; Inca area, 250; intensive, Aztec, 246; lack of, in the Plains, 222; limits of distribution in North America, 12-13; main dependence on in Southwest area, 241; nomadic tribes of the Southwest, 243-244; Old and New Worlds, 380-381; origin of, 319; Southeastern area, 239, 240; woman's work in eastern maize area, 14
- Alaska, antiquity of sites, 326
- Alaska-Siberian type of pottery, 69-70
- Aleutian Islands, basketry of, 50, 55
- Algonkin, 45, 50, 110, 111, 165, 180-181, 184, 210, 233, 237, 258, 339; correlated with Woodland horizon, 314; possible historical relation to Eskimo, 126. See also Algonquian
- Algonquian, languages, 333, 343; linguistic area, 274; stock, 333, 334, 335, 343, 344, 345; stock in California, 334; stock, consolidated with California stocks, 391; stock, linguistic and tribal groups, 391-392; stocks, linguistic, recently combined with, 335
- Alpaca, herded for wool, 36
- Altars, sand painted, Pueblo area, 243
- Amazon area, culture characterization of, 253-259
- Amherst students, bodily proportions, 361
- Ancestors, family, carving influenced by beliefs concerning, 89
- Andean region, chronology of, 313
- Angakok*, 202, 204
- Animal, lodges, Caddoan, 204; tales, prevalence of, in mythology, 208; transport, distribution of, 29
- Animals, clan and gens names derived from, 174; domestication of, 28-38; early introduction of Euro-

- pean, 38; extinct, association of man with, 324; life-like forms of, carved, 89; Old World, early adoption in Southeastern area, 240; take on human qualities in mythology, 208
- Animism, 214-215
- Anthropology, aims of, xv
- Antilles, 40, 43, 65, 68, 117, 125, 127, 139, 167, 254, 268, 313; archæological characterization of, 289, 290; cultural characterization of, 259
- Antiquity, of archæological deposits in the Arctic, not established, 284-285; of archæological remains in California, 281-282; of cultures in Peru, 293; estimated Folsom horizon, 327; of man in the New World, 323-326, 328; peopling of North America, 384; of remains in Patagonia, 296; shell deposits, North Atlantic area, 268; of skeletal remains, 372-375
- Antler, process of working, 127; work in, Iroquoian area, 271
- Apu Ollantay, Inca drama, 212
- Aqueduct systems, Andes, 24; Peru and Mexico, 108
- Arapaho, 333, 345
- Araucanians, 137, 160, 178, 251, 252, 253
- Arawak, 41, 167, 249, 253, 257, 259; distribution of, 254
- Arawakan stock, 344
- Arch, absence, in New World architecture, 102
- Archæological areas, 263, 296-303
- Archæological characterization of culture areas, Antilles, 289-290; Arctic area, 284-285; Atlantic Highlands, 295-296; California, 281-283; Canadian area, 285; Central Mexico, 286; Chile, 294-295; Colombia, 290-292; Columbia Basin, 283-284; Ecuador, 292-293; Great Lake and Upper-Mississippi area, 274-276; Iroquoian area, 270-271; Mississippi-Ohio area, 271-274; North Atlantic area, 263-268; Northern Mexico, 285; North Pacific Coast, 284; Oaxaca, 286-287; Panama, 287, 289; Patagonia, 296; Peru, 293-294; Plains area, 276-278; Pueblo area, 278-281; South Atlantic area, 268-270; Venezuela, 290-292; Yucatan, 287
- Archæological, classification, 263-304
- Archæology, Eskimo, 233; integration with historic aboriginal cultures, 328, 329; North America, 263-290; South America, 290-296; time sequence in, 305
- Architecture, 102-118; centers of development, 102; Inca area, 250; Maya, 287; Mitla, 286; Pueblo, 106, 278-279; Toltec, 286
- Arctic, area, archæological characterization of, 284-285; area, sequence of cultures, 312; site, stratification of, 307
- Armor, defensive, 137; Northern California, 229; North Pacific Coast area, 230; Plateau area, 225
- Arracacha, domestication of, 318
- Arrow-head, common types of, 123; distribution and form, 122; North Pacific Coast area, 230
- Arrow point, copper, 274; Iroquoian area, 270
- Art, Arctic area, 285; center, Pueblo, 80-82; characteristics of New World, 96; decorative, Eastern Woodland area, 238, 239; decorative, Northern California, 229; decorative, North Pacific Coast area, 230; decorative, Plateau area, 225; double-curve, 85-88; geometric, 79; geometric, Plains, 222; geometric and realistic, 77; individualities in, 96; of intense culture area, 91; Maya, high development of, 317, 321; Plains, 83, 84-85; realistic, 85-87; symbolic, 242
- Artifacts, archæological, Chile, 295; classification of, 297; associated with camel, 325; associated with extinct bison, 324, 325; associated

- with mammoth, 324; California area, 281-282; Colombia, 291; Columbia Basin, 283; distribution, 263; Eskimo, 284; Iroquoian area, 270-271; Lindenmeier site, 324; Mississippi-Ohio area, 272; most common in Antilles, 289, 290; North Atlantic area, 265-267; Northern Mexico, 285; Plains area, 276, 277; skeletons dated by accompanying, 375; South Atlantic area, 268-269; stone, types, and distribution, 122-128; Venezuela, 292; Yuma type, 325
- Arts, fine, 141-157; mechanical, Pueblo area, 242; textile, 42-65
- Asian-American group, characteristics and area of distribution, 362
- Aspect, in archaeological classification, defined, 299, 300, 302; culture sequences generalized under, 310
- Astronomical knowledge, New World peoples, 136, 387
- Athapaskan stock, 335, 339, 344, 345, 383; linguistic and tribal groups, 392, 401
- Atlantic Highlands, archaeological characterization of, 295-296
- Australians, 351, 356, 362, 383; bodily proportions, 361
- Australian-African group, characteristics and area of distribution, 362
- Ax, copper, 130, 274; grooved, distribution, 123, 289, 291, 295
- Axes, North Atlantic area, 265, 266, 267; perforated, in Neolithic Europe, 127; South Atlantic area, 268
- Aymara, distribution, 249
- Aztec, 28, 141, 144, 173, 196, 245, 246, 286, 321, 322, 323, 388; chronology, 322; culture, similarity to Maya, 246-247; most typical of the Nahua culture, 244; ruin, dating by tree ring method, 308
- Bakairi, 360
- Balsa, distribution of, 40; in Plateau area, 227
- Bands, found among hunting groups, 162-164; quill-worked, 86-87, 90
- Bannerstone, 125; possibly a mesh gauge, 48
- Barefoot regions, outlined, 60-65
- Bark-beater, ridged, 136
- Basket Makers, 273; head form, 373, 375
- Basket Maker III period, 280
- Basket Maker periods, establishment of, 279-280
- Basket Maker-Pueblo, cultures, chronology of, 310, 311, 329; period, 280, 281
- Basketry, 48-53, 242; area, outlined, 80; California area, 50, 52, 96, 228; cane, 53, 90-91; central group, North Pacific Coast tribes, 230; decorations on, 76; distinguished from cloth, 53; distribution of types, 52; eastern maize area, 90-91; Eskimo, 90, 232; Haida and Tlingit, 90; imbricated, 80; Northern Shoshonean tribes, 226; Pima, 243; Plateau area, 225; rattles, 155; Southeastern area, 90-91; Southwestern area, 242-243; splint, 53; techniques, 80; Tlingit, 229
- Baskets, Aleutian, 74; California, designs on, analyzed, 85; cane, 78, 240; classification of, 50-52; cooking, 52; decoration of, 76-78; flexible, 55
- Bast fibers, used in textiles, 42-43
- Beadwork, 82-84; design elements in Plains, 85; floral designs on, 86; Plains designs analyzed, 85
- Bear, belief in power of, 214
- Bee, domestication of, 28, 38, 246
- Berries, used as food, Déné, 234; Carrier, 8; salmon area, 10; and fruits, rarity in acorn area, 11
- Betel nut culture, analogy of tobacco chewing to, 25
- Birchbark, canoes of, 40; covers for tipis, 111; decorations on, 86; high development of drawing on, 87; vessels and canoes associated, 53

- Bison area, 3, 31, 35, 42, 52, 66, 111, 127, 156, 163, 165, 188, 211, 213, 215, 371; costume, 63; described, 6; designs, 83; pottery made in, 68
- Bison, eastern range of, 14; extinct, artifacts associated with, 324, 325; methods of hunting, 6-7. See also Buffalo
- Bite, comparative observation on, 351-352
- "Black drink," Southeastern area, 241; widespread use of, 197
- Blackfoot, 345
- Blanket, Chilkat, 55, 59, 90, 229; Navajo, 77, 81-82; rabbitskin, 57, 226
- Blind Dupe, distribution of story, 210
- Blood-clot Boy, story, 211
- Blood, feuds, tribes with simple organization, 183; groups, 357-358; offering, Maya and Nahua, 205; as a means of purification, 215; vengeance, right of recognized in North America, 179; vengeance, tribes of Gulf States, 181
- Blowgun, distribution, 139, 379; used in hunting, Amazon Basin, 19
- Boats, Eskimo, 41; frame, distribution, 40; in the New World, 38-41
- Bochica, Chibcha culture hero, 213, 248
- Bodily proportions, 358, 359, 360, 361
- Bolas, 8, 35, 251, 253; stone, Patagonia, 296
- Bone, artifacts, Iroquoian area, 271; artifacts, in Missouri Valley, 275; prevailing tool materials in hunting areas, 127; process of working, 127
- Boomerang, Pueblo area, 242
- Boundaries, to culture areas, 261-267, 297; of pottery area, 66-68
- Bow, in bison area, 35; distribution, 139-140; musical, 155; sinew-backed, 385
- Bowdrill, 132, 381
- Bread, acorn, 11, 227; cassava root, 24; coonti roots, 239; hemlock bark, 10; tuckahoe and persimmon, 14
- Breadth, of face, 349; of head, 354, 358
- Bricks, made in Mexico, 72
- Bridges, suspension, in Peru, 108
- Bronze, made in Inca area, 250; use in the New World, 130-131, 381
- Brown's Valley Man, antiquity of, 374
- Brush shelters, 113
- Buffalo, dependence on, by Plains Indians, 221-222, 233; hair, used as fiber, 42; hair, spinning, 47; hair weaving, northern extension of, 59. See also Bison
- Building, art, diffusion of, 107; northern limits of Nahua, 106-107
- Buildings, Peru and Yucatan, differences in, 103-104; stone, Pueblo and Eskimo areas, 109-110
- Bull-boat, 40, 251
- Bundles, ceremonial, 199-200
- Burial, form of, 264, 268, 269, 270; mound, distribution, 105-106; platform, guanaco area, 251; "red-paint," 266; urn, 73, 109, 268, 269, 294, 295
- Burning Cannibal, distribution of story, 210
- Cache, important invention caribou area, 6; pits, North Atlantic area, 265, 266
- Caddo, 273
- Cahokia mound, 105, 116, 271
- Cakchiquel, 323
- Calabash rattle, distribution of, 155, 203
- Calchaqui, 109, 294; stock, 251, 252
- Calendar, system, Maya, 194, 246, 321; Maya, aid to establishing chronology, 317
- California, area, archæological characterization of, 281-283; area, characterization of culture, 227-229; culture traits, in Plateau area, 227; languages, 333-334, 337; stratigraphy, 313

- Calpulli*, function of, among Nahua, 178
- Calumet, pipe, 180; procedure, Southeastern area, 241
- Camas, chief root used in salmon area, 9-10
- Camel, prehistoric, artifacts associated with, 325
- Canadian area, archæological characterization of, 285
- Cane, baskets, 53, 78, 90-91, 95; tube, for smoking, 125
- Cannibal, cult, North Pacific Coast tribes, 230; feast, Amazon tribes, 256; society, Nootka, 204
- Cannibalism, Inca area, 250; South Atlantic area, 269
- Canoe culture, Amazon area, 258
- Canoes, 38-41, 379; West Indies, 40
- Carib, 41, 172, 249, 253, 254, 259; stock, 344
- Caribou area, 1, 3, 4, 31, 35; dependence of Canadian tribes and Eskimo upon, 3-4; tribal groups in, 3
- Caribou, range of, 1, 3, 4; range and importance of, Mackenzie area, 233
- Carving, in Columbia Basin, 284; distribution of, 88-89, 146; ivory, 89; Maya, sequence of, 317; North Pacific Coast area, 112, 230; stone, 141, 272; wood, 88-89, 146
- Casas Grandes, 279, 285
- Cassava, area of cultivation, 24; preparation for use, 24. See Manioc
- Catlinite, use of, in Great Lake and Upper Mississippi area, 275
- Cattle, introduction of, 8, 34, 251
- Cedarbark, fiber, 42; weaving, 55, 136
- Ceilings, 102; absence of vaulted, Nahua buildings, 106
- Celt, 123; distribution of Porto Rican, 289; hafted, 124, 127; Iroquoian area, 270; jadeite, 125; South Atlantic area, 268
- Central Algonkin, 55, 197, 200, 203, 204, 237
- Central Mexico, archæological characterization of, 286
- Cephalic index, distribution in the New World, 353-355; rapid change in, immigrant population of United States, 355; range and variability of, 354-355; tribal groups, according to culture areas, 373
- Ceramic arts, 66-75
- Ceremonial tablets, birchbark, 135
- Ceremonialism, great development of, 193
- Ceremonies, Amazon tribes, 256; dogs eaten during, 36; eagles and serpents confined for, 28; Eastern Woodland area, 238; Eskimo area, 232; Inca area, 250; Lacandonese, 246; marriage, 189; Maya, 194-195; Mexican, 196; Northern California, 228; Pueblo area, 243; rituals of Pueblo and North Pacific Coast, 212
- Ceremony, Atamalqualiztli, 196; masked, 195; new-fire, 196; typical New World, 207
- Chacmool statue, 141-142, 143, 289
- Charrua, 253
- Chavin Stone, 108
- Cheyenne, 66, 160, 213, 220, 261, 345, 370; migrations of, 261
- Chibcha, agricultural products of, 17; area, 158, 167, 194, 201, 204, 213, 215, 247-249; area, cultural characterization of, 247-249
- Chichen Itza, 142, 287
- Chichimec period, 286
- Chilan Balam, Books of, 147
- Children, care and training of, 189-192
- Chile, antiquity of man in, 325, 326; archæological characterization of, 294-295; sequence of culture, 313
- Chilkat, 55, 59, 90, 229
- Chimney, absence of, in aboriginal houses, 115
- Chimu, 293
- Chiriqui, 93, 247, 289; pottery from, 75
- Chronological, position, problematic

- forms, Great Lakes area, 274, 275-276; types of man, 372-375
- Chronologies, continuity of, 329; established, 310-315; growth cycles in, 329; provisional, 328
- Chronology, in archæological classification, 300-302; Arctic area, 284-285; Aztec, 286; basis for solution of problems of similarity between Maya and Asiatic drawings, 382-383; ceramic designs, indices to, 76; Chile, 295; Colombia, 323; of cultures, 305-330; Ecuador, 293; Eskimo cultures, 316; Florida shell mound, 269-270; Great Lake and Upper-Mississippi area, 275-276; Inca, 321; Kentucky, 273; Maya, 287, 321; Mexican, 286-287, 322; Mississippi-Ohio area, 272-273; North Atlantic area, 266-268; Peru, 293; prehistoric Iroquoian, 271; Pueblo area, 279-280; of sculptures, 141; Southwestern, 82; Tiahuanaco, 293; Valley of Mexico, 286
- Civilization, centers of, in the New World, 387
- Clan, defined, 164; system, Arawak, 167
- Clans, 164-168; and gentes, geographical distribution, 165-167; Iroquois, 167, 169; Pueblo, 167
- Classification, archæological and ethnological basis of, 297-303; basic, in archæology, 305
- Classification of man, basis of, 347-348; breadth of face, 349; flattening of the femur, 350; flattening of the tibia, 350; by hair, 347-348; by skin, 348
- Classificatory system of relationship, 170
- Clay, edible, 18; modeling in, 144; pipes, 269
- Clays, laminated, basis of geological method of dating, 309
- Cliff-dweller, house, 279; houses, basketry remains in, 52; houses, textiles from, 58; ruins, textiles from, 82
- Cloth, 53-59; bark, 136; clothing of, 62; cotton in manioc area, 59; Peruvian, 57-58
- Clothing, 60-65; Amazon tribes, 256; California area, 228; Eastern Woodland area, 238; Eskimo, dependence on caribou for, 5; guanaco area, 252; Mackenzie area, 233; North Pacific Coast area, 240; Plains, 222; Plateau area, 225; Pueblo area, 242; skin, 44, 316; Southeastern area, 240; southwestern Déné, 234-235; tailored, distribution of, 60-62; tailored, in the Old World, 62, 64, 385
- Cloud terrace, Pueblo symbol, 99, 100
- Clovis site, 386
- Coal, Hopi discovery of, 140
- Coca-chewing, 25-26; Chibcha area, 248
- Codex, Mexican, resemblance to year counts, 134-135
- Codices, 147; Maya, 134; Mexican and Maya, 144
- Coil, method in making pottery, 69; spiral, direction of, in basketry, 52
- Coiled, basketry, distribution, 50, 52; technique in basketry, 80
- Collars, stone, in the Antilles, 125
- Colombia, archæological characterization of, 290-292
- Colonization, Spanish, changes caused by, 8, 34, 251; realism in textile art due to, 91-92
- Colonnades, common, in Mexican houses, 103
- Color sequences, in Peruvian designs, 93
- Columbia Basin, archæological characterization of, 283-284
- Communal, character of land system, 185-186; foundation of agricultural concept, 186
- Communistic government, 158
- Complex, cotton, unity in the New World, 47; horse-riding, 34-35; maize, unity in the New World, 47

- Component, in archæological classification, defined, 299, 302
- Confession, conventional, Inca area, 250; of sins, distribution of, 216
- Consonants, forms of, 337
- Conventionalization, in design, 86
- Copper, aboriginal workings of, 274; knives, 124, 126; Lake Superior, 129; mining, 129; tools, 129-130, 245; work in, North Pacific Coast, 230; work in, South Atlantic area, 268
- Cortez, 118, 244, 247, 286, 323
- Costume, bison area, 64; distribution and types in the Old World, 62-64; tailored, 60-64
- Cotton, armor of, 137; culture, distribution, 43; raised in South America, 55; unity of New World complex, 47
- Couvade, in South America, 195
- Cranes, domestication of, 28
- Crane Bridge, distribution of story, 210
- Creation, in mythology, 210
- Crests, North Pacific Coast tribes, 230
- Crime, compounding of, 179; punishment for, 177-183
- Cro-Magnon man, 367, 369
- Crops, aboriginal, in North America, 12-13
- Cross-cousin marriage, 188
- Cults, Mazateca, 196; shamanistic, 203-204
- Culture, Amazon area, 253-259; American, independent development of, 12; of the Antilles, 259; anthropological conception of, 219; areas, aboriginal, integration with archæological areas, 314, 328, 329; areas, correlation with language areas, 342; areas, geographical boundaries, 261-262; areas, method of classification, 302, 303; areas, North America, 220-247; areas, outlined, 219, 297; areas, South America, 247-259; areas, South-western United States, 280-281; center, Antilles, 289; center, North Pacific Coast area, 284; centers, 261-262; centers, Colombia, 290; centers of highest, 217, 383; centers, New and Old World, 382; centers, Peru, 293; changes, Arctic area, 285; chronology of, 305-330; classification, 333; classification of social groups according to, 219-262; Columbia Basin, 283-284; common traits in New and Old Worlds, 381-382; complexes, fundamental, 387; complexes, higher, origin of, 379; by conquest, 159; continuity of, 314; contrasts in Inca area, 249-250; correlated with political organization, 261; correspondences between Old and New Worlds, 379-381; development of Pueblo, 280; differences in Amazon area, 253-259; differentiation of, a historical phenomena, 378; diffusion, 78; divisions, Déné area, 236; Eskimo, chronology of, 316, 317; fundamental differences in New and Old Worlds, xv; fundamentals of Old World, 379; grouping, 333; guanaco area, 251-253; hero, in mythology, 209; hero, Peruvian, 193; hero trickster, wide diffusion of concept, 214; horizon, Folsom, 327; horizons, 312-314; horizons, Arctic area, 284-285; levels, British Honduras, 287; Mississippi-Ohio area, 271-274; Mongoloid-Red peoples, contributions to, 384-386; most advanced in area of intense agriculture, 14; Mound, 272-273; Ozark Mountains, 273; patterns, 260; periods, Central Mexico, 286; Plains, 220-224; regional continuity of, 314-315; regions of high, linguistic diversity, 344; Scioto Valley, 273; seafaring, 40-41; sequence in the New World, 328; sequences in, 293, 323; sequences, bases of establishing, 328-329; sequences, Chile, 313; sequences, Eskimo, 312; sequences, examples of, 310-315; sequences,

- Illinois, 311; sequences, Mexico, 312-313; sequences, Mississippi and Woodland horizons, 314; sequences, New York State, 300-302, 310-311; sequences, Peru, 313; sequences, Pueblo area, 373; sequences, Upper Mississippi region, 311; stage, early New World man, 326-327; subdivisions of North Atlantic area, 265; subdivisions, South Atlantic area, 268-270; subdivisions, Atlantic Highlands, 295-296; subdivisions, Colombia, 290-291; subdivisions, Ecuador, 292; succession of, in Chile, 294-295; time required for development of, 367; trait-complexes, analysis, 318; traits, common to New World and Pacific, 379; traits, independently developed, 387; traits, marginal survival of, 315; traits, oldest New World, 316; traits, origin of New World, 386; traits, originality of many New World, 379-381; traits, South American, 247-249; types of Southwestern area, 241; unity of, in California archæology, 281; unity in fundamentals, New World, 217-218, 343, 379-381; varieties in Inca area, 249-250; varieties of mound in Ohio, 272-273
- Cultures, chronology of, 305-330
- Cuspo, on molar teeth, 351, 359
- Cycle, annual, tribes in salmon area, 10; religious, Maya, 194; yearly, ceremonial, 204-205, 215; yearly, in social life, 162-163
- Cymotrichi, found in Polynesian-European group, 362
- Dakota, 97, 98, 111, 144, 152, 160, 172, 184, 323, 371
- Dancing Birds, distribution of story, 210
- Dates, assigned to ruins in Pueblo area, 309
- Dating, Basket Maker-Pueblo cultures, 310, 311; direct, 308-310; Hohokam culture, 310, 311; by laminated clays, 309; by stalagmite formations, 309-310; by tree-ring method, 307
- Day and night, origin of, as told in myths, 209
- Decoration, architectural, North Pacific Coast, 112; coiled baskets, 80; Colombia pottery, 291; Iroquoian pottery, 271; Marajo Island pottery, 295; Mississippi-Ohio area pottery, 272; North Atlantic area pottery, 265, 266; Peruvian pottery, 93-95; pottery, 74-75, 81; pottery and baskets, 76, 77, 78; South Atlantic area pottery, 269
- Decorations, North Pacific Coast baskets, 90; painted on bark and wood, 95; on pottery by glaze, 71
- Decorative art, development of, 99; designs, 76-101; features of Maya and Nahuatl buildings, 106-107
- Deer, in acorn area, 12; chief game in eastern maize area, 14
- Defensive works, North Atlantic area, 265, 266
- Delaware, 323
- Deluge concept, distribution, 214
- Déné, 5, 50, 52, 87, 90, 113, 127, 179, 188, 189, 202, 234-235
- Descent, common, Mongoloid, and New World peoples, 347-348; morphological grouping of mankind based on, 347; skin color indicating common with Asiatic peoples, 348
- Descriptive system of relationship, 170
- Desert culture, chronology of, 310, 311
- Deserted Children, distribution of story, 210
- Design, areas, North America, 81; ceramic, an index to chronology, 76; elements, Plains beadwork, 85; geometric, range of, 76; names, 97, 98, 99; unity of concepts, Peruvian pottery and cloth, 93-95
- Designs, alligator and armadillo, 93;

- analysis of, 97-99; analytic comparison of, 85; Apache baskets, 84; basketry and beadwork, 97; basketry, California center, 80; beaded and painted, Plains, 84; Calchaqui pottery, 295; cane basketry, 90-91, 95; caribou and eastern maize area, 85; ceramic, indices to chronology, 76; Chilkat blankets, 90; decorative, 76-101; distribution of, 80-96; Inca textiles, 93; influenced by technique of basketry and weaving, 77; Mississippi-Ohio area, 272; Navajo blankets, 81-82; Northwest Amazon, 95-96; painted on pottery, 93, 95; Peruvian, series of, 94; Plains and California, independent origin of, 85; pottery, 74-75, 291; realism in, 77-80, 82; Shoshoni beadwork and basketry, 84; symbolism in, 97-101; Southwestern pottery, 80-82; textile, 77-80, 90, 91, 92, 93-95; on urns, from Chile, 294
- Diaguite, 294
- Dialects, language, defined, 332
- Diffusion, in art, 84; Aztec traits of culture, 247; basic clothing concepts, 316-317; cane baskets, 78; cotton complex, 43, 47; culture traits in the Amazon, 258; horse and horse culture, 251-252; house-building art, 107; maize complex, 23; methods of reckoning time, 136; in mythology, 211; societies, Plains area, 317; New World culture complexes, 387; Old World traits of culture, 380-381; Plains Indian societies, 317; skin clothing in North America, 316-317; white-man god idea, 213-214
- Digging-stick, Plateau area, 225
- Digging tools, 21
- Direct dating, 308-310
- Discipline, 189-191
- Disease, ceremony for driving out, 195
- Dispersion, of mankind, 363-364; of primates, 364, 365
- Distribution, Algonquian and Siouan stocks, 345; as a criterion of age, 315, 316, 320; of culture, 305; geographical, linguistic stocks, 341-346; linguistic stocks, 344; Pacific Islands culture traits, in New World, 379; phonetic, 339; pottery making, 319
- Divisions, dual, 168-170
- Divorce, regulation of, 189
- Documentary records, Mexico and Yucatan, 320-321
- Dog, culture, 32; domestication of, 386-387; eaten by Nootka Cannibal society, 204; first appearance in Paleolithic Europe, 28; food, 36; hair as a textile fiber, 42; packing, distribution, 31-32; traction, intrusive in the New World, 32-34; transportation by, 30, 32; use of, in the New World, 30-32
- Domestication, of animals, 28-38; Inca area, 250; probable regions of origin, 318, 386-387
- Doors, New World houses, 103
- Double-curve, art, origin, 86; design, 85-86
- Downward weaving, 53-55; distribution of, 55
- Drama, 212; cultivated by the Inca, 145, 212
- Drawing, 144
- Dream, to obtain individual guardian, 199
- Drilling, methods of, 121-122, 132, 133-134
- Drums, varieties and distribution, 155-156
- Dual, divisions, 168-170
- Dug-out, Amazon Basin, 258; canoes, 229, 258; North Pacific Coast, 40-41
- Dyeing, New World, 381
- Earth-lodge, 110, 114, 222, 224; distribution, 110
- Earthworks, 116-117, 271-272
- Eastern maize area, 2, 3, 12, 13, 21, 23, 59, 62, 90, 117, 123, 128, 129, 156, 165, 319

- Eastern Woodland area, 260, 261, 275; culture characterization of, 236-239
- Ecuador, archæological characterization of, 292-293
- Economic areas, 220
- Education, 189-192; Aztec, 246
- Effigy, jars, 73; mounds, 272, 274; vessels, from Colombia, 291
- Elevation, distribution of certain linguistic stocks, coincident with, 254
- Emerald mines, worked in Colombia, 291
- Emetics, taken as a means of purification, 197, 215
- Endogamy, among Pawnee, 167
- Environment, Chibcha area, 248; factor in change of cephalic index, 355; similarity of bison and guanaco area, 34
- Eskimo, 10, 31, 33, 39, 40, 41, 48, 49, 50, 52, 60, 70, 74, 88, 89, 90, 109, 113, 114, 121, 122, 123, 124, 126, 127, 132, 134, 150, 151, 156, 169, 179, 188, 189, 190, 204, 215, 216, 233, 285, 307, 312, 316, 317, 329, 339, 349, 356, 360, 363, 369, 375; archæology, 233; area, characterization of culture, 231-233; bodily proportions of, 360; characterized as to food, 3, 5; culture periods, 314; groups of, 231; migrations, 10; possible historical relation with Algonkin, 126
- Etowah mound, 116, 271
- Exogamic groups, North Pacific Coast tribes, 230
- Exogamous regulations, connected with dual divisions, 169-170
- Exogamy, 165
- Explanatory element, in mythology, 209
- Eye, fold, Mongolian, in the New World, 348-349, 359; color, New World, 358; form, 359
- Eye Juggler, distribution of story, 210
- Face, breadth of, New World, 349, 359; form, 375
- Facial angle, New World, 359
- Family group, has title to lands among Inca and Nahua, 185-186; importance in communistic government, 158; importance in government of Mexico, 159; independent of the band, 162-163
- Fasting, to obtain spiritual manifestation, 199
- Father-in-law taboo, 171
- Fauna, extinct, association of man with, 324-326
- Feather mosaics, 59-60, 246
- Feather-work, 59-60
- Federations, of tribal groups, 160
- Femur, flattening of, 350
- Fertilization, artificial, range of, 23
- Fiber, textile, classes of, 42-44; twisting, methods of, 44-47; twisting, universal distribution of, 44, 53; twisting, without a spindle, Déné, 235
- Fibers, bast, 42-43; distribution correlated with whorl distribution, 44-45; wool, 43
- Fine arts, 141-157, 387
- Finger weaving, 53-54
- Fire, invention of, 134; renewal of, associated with agriculture, 215; shamanistic handling of, 203; universal use of, 44
- Firedrill, 134, 386
- Firing, of pottery, methods of, 69, 70, 72, 140
- Fish, fertilizer for maize, 23; methods of taking, 14; nets, distribution of use, 48; taboo against, in bison area, 6; taboo against, among Pueblo tribes, 16
- Fishing, absence in the Plains, 222; appliances for, Eskimo and Indians, 6; in Peru, 18; sea, in salmon area, 9
- Flageolets, 156
- Flaking, process of, 120
- Flint, culture, Haiti, 290; workings, aboriginal, 128
- Flutes, 156

- Flying goose, design, distribution of, 98
- Foci, archæological, California, 282
- Focus, in archæological classification, defined, 299-300, 302
- Folklore, in America, content of, 208-209
- Folsom, artifacts, 374; culture horizon, 326-327; cultures, 324, 386; point, 277; type points, 325; type sites, 277
- Food, Amazon tribes, 254, 256; animals domesticated for, 36, 38; areas, 1-27; California area, 227; dogs as, 36; Eastern Woodland area, 236, 237; Eskimo area, 231; guanaco area, 251; lack of specialization in interior Amazon, 18-19; Northern California, 228; Northern Shoshonean tribes, 226-227; North Pacific Coast area, 229, 231; Plains area, 220, 222; plants, aboriginal, 318-319; plants, New and Old World, 380-381; Plateau area, 225; Pueblo Indians, 241-242; Southwest area, 243; southwestern Déné group, 234; specialization in, a universal tendency, 1
- Foods, Maya and Nahua, 16; wild, correlated with instability of residence, 10
- Footgear, 63-65
- Footrace, ceremonial, 197
- Footwear, forms of, 63; guanaco area, 252
- Forests, distribution of, in South America, 255
- Fort Ancient, 117; culture, 271-272, 273, 275, 276, 314
- Fortifications, 117-118
- Four, sacred number in New World, 216
- Fox, 169; society song, Dakota, 152-153
- Fruits, early introduction of European, 38
- Fuegians, 40, 139, 190, 252, 253, 350, 356, 383
- Fuel, 140
- "Garden beds," Michigan, 274
- Gauge, mesh, distribution of, 48
- Gens, defined, 164; function, in social organization of Mexico and Peru, 178
- Gentes, 164-168
- Gentile sibs, distribution, 165
- Geographical grouping, linguistic stocks, 341-343, 344-346
- Geometric, art, 78-80; art, bison area, 82-84; art, produced by women, 96; art, Pueblo pottery, 80, 82; character of New World designs, 76; designs, in bison area made by women, 84; designs, 84, 86-87
- Ghost dance religion, 320
- Gifts, formal presentation of, 187
- Glaze, on pottery, 71
- Glottal stops, peculiarity in American speech, 337
- God systems, 213-214
- Gods, Mexican, 196
- Gold work, Aztec, 246; Chibcha, 248; Ecuador, 292; high development of, by Cañarian, 250; in Inca area, 250; Maya, 245; in the New World, 131; in Panama, 289; South Atlantic area, 268
- Gorgets, 272
- Gouge, 123
- Gourds, cultivation of, 319
- Government, compact, coincident with clan-gens organization, 165, 167; Gulf States, 181-182; higher cultures in the New World, 158-159; Inca system, 159, 173; predominance of independent tribal, 161; Pueblo, 160; system of the Siouan, 180
- Grave Creek mound, 271
- Great Lake and Upper-Mississippi area, archæological characterization of, 274-276; culture sequences, 311
- Groundplan, Casas Grandes, 279; characteristic of New World architecture, 102; Peruvian house group, 106-107; Pueblo houses, 279

- Ground sloth, contemporaneity with man, 325
- Group marriage, 188
- Grouped clans, 168-170
- Grouping, social, 158-176
- Groups, local, 162-164
- Guanaco area, 3, 7-8, 134, 139; changes inaugurated by Spanish colonization, 8; culture characterization of, 251-253
- Guatovita, sacrificial shrine, 195
- Gypsum Cave, 325
- Habitations, Guanaco area, 252; Plains area, 222; prevailing, Maya and Nahuatl area, 106; United States and Canada, types and distribution, 109-115
- Hafting, 124, 126, 127
- Haida, 89, 90, 112, 139, 172, 229; stock, 335; stock, linguistic and tribal grouping, 394
- Hair, basis of classification of man, 347-348; buffalo, spinning of, 42, 47; form, Asia and America, 347-348, 358; goat and dog, as textile fiber, 42; grouping of peoples by, 362; straight black, universal in the New World, 347-348, 358
- Hammer, grooved, North Pacific Coast, 123-124
- Hammerstone, pitted, 124
- Hammocks, cotton, 43, 55; southern limits of use, 109
- Harpoon heads, indices to time sequence, 284
- Headdresses, feather, bison area, 60
- Head, breadth of, 354, 358; capacity, 359; flattening practised among the Maya, 143; form of, 352-355, 358, 373, 375; form, Asia and America, 358-359; form, South America, 294
- Heating, universal method of, in America, 115
- Heavenly bodies, in myths, 208
- Hemlock bark, made into bread-like food, 10
- Hereditary right, to community functions, 187
- Heyoka cult, 204
- Hidatsa, 19, 24, 30, 169, 172, 222
- Hierarchy, priestly, in region of high cultures, 193; supernatural, complexity of Maya and Aztec, 196; supernatural, of the Pueblo, 196-197
- Hill-fort, Mississippi-Ohio area, 271
- Historical, chronologies, New World, 312-313; connection, North Pacific Coast area with Columbia Basin, 284; contacts, revealed in Plains area, 317; sequences, 320-323; types of Pueblo houses, 279; data, Nahuatl culture, 244
- History, Aztec, 322-323; Inca, 321-322; Maya, 321; Mexico, Peru, and Yucatan, chronologies based upon, 322-323; Pueblo area, established by dating by tree-ring method, 308, 309
- Hoe, distribution of, 21-23; shell, 269
- Hogan, Navajo, 111, 113, 115
- Hohokam culture, 280-281; chronology of, 310, 311
- Hokan, 383; linguistic stocks grouped under, 334, 391; proposed name for combined stocks, 394
- Hopewell culture, 272-273, 276, 314
- Hopi, 19, 82, 140
- Horned serpent concept, wide distribution of, 214
- Horse, complex, taken over as a whole by New World natives, 379; cultivator, first in England, 21; culture, 32, 34; culture, acquired in the New World, 34-35; culture, differences between North and South America, 34-35; culture, guanaco area, 139, 251-252
- Horses, introduction of, 6, 8, 251-252
- House of the Nuns, groundplan of, 104
- Houses, adobe and stone, 106; Amazon tribes, 256; California area, 227; Chibcha area, 248; Déné area, 236; earth-covered, 114; Eastern Woodland area, 236-238;

- Eskimo, 113-114, 232; guanaco area, 252; nomadic tribes, 243-244; Northern California, 228-229; North Pacific Coast, 229, 231; Plateau area, 225, 226; Pueblo area, 241, 279; Southeastern area, 229, 230; stone, distribution of, 114; totem pole, North Pacific Coast, 112; types and distribution, South America, 108-109; types and distribution, 108-115; underground, 113
- Huaca, defined, 194, 216
- Human, carrier, prevailing mode of transport, New World, 32, 35-36; flesh, eaten by Gulf tribes, 239-240; sacrifice, 194-195, 197
- Hunting areas, 3-9; Inca, 17-18; interior Amazon Basin, 18-19; methods of, 5, 6, 233, 238; Pueblo area, 242; South America, 7; Southeastern area, 239-240
- Hymn, Inca, 148-149
- Ice, time allowed since last retreat of, in the New World, 367
- Ideals, for the young in the New World, 190-191
- Immigrant population, in the United States, rapid change in cephalic index, 355
- Immigration, American natives, northwestern route, 359-360
- Implements, copper, Great Lake and Mississippi area, 274; stone and bone, Columbia Basin, 283; stone, chronological series of, 119; stone, North Atlantic area, 264; types of, Ecuador, 292; types of, Patagonia, 296; types of, Venezuela, 291
- Inca, 102, 105, 107, 118, 126, 144, 148-149, 158, 159, 165, 167, 173, 185, 186, 187, 194, 195, 198, 201, 204, 212, 213, 245, 249-250, 292, 293, 294, 295, 388; area, characterization of culture, 249-250; chronology, 321; controlled Ecuador at Spanish Conquest, 17; food, 17-18
- Incense burning, universal distribution, 215
- Incised designs, 87
- Incising, of pottery, 75
- Incisor, shovel-shaped, in the New World, 351, 352, 359
- Indemnity, in payment for crime, 182, 183
- Independent development, Plains art, 84-85; inventions, New World, 138, 140, 156; New World cultures, 380-382
- Index, face-breadth head-breadth, 349
- Indian, American, popular interests in, xvi
- Individual guardians, 199-200, 206-207
- Infants, exposing of, 189
- Inferential sequences, 315-320
- Inheritance, conception of, 185-187; rules of, 187
- Inscriptions, dated, Maya, 287, 323
- Insects, as food, 12, 227
- Insignia, feather, bison area, 60
- Instability of residence, correlated with use of wild foods, 10
- Instruments, musical, 155-156
- Interglacial period, marks arrival of man in the New World, 366-367
- Invention, independent, age-graded societies, 173; independent, blow-gun, 139; independent, pellet-shooting bow, 140; independent, roller printing, 291; independent, use of zero, 135
- Inventions, aboriginal, 138, 140; independent, New World, 138, 140, 156, 381; Old World, Chinese priority in, 384-386; special, 132-140
- Iron, absence of, in New World culture, 381
- Iroquoian, area, archaeological characterization of, 270-271, 273; stock, 333, 342; stock, linguistic and tribal grouping, 394; tribes, 236
- Iroquois, 13, 19, 31, 45, 73, 110, 117, 133, 139, 160, 167, 168, 169, 181, 182, 189, 239, 258, 261, 270, 271, 314, 320; league of the, 160

- Irrigation, Chibcha area, 248; Inca area, 250; limits of, 24; South-west area, 243; systems, Peru and Mexico, 108
- Jacob's Cavern, period of occupation, 310
- Jaguar, belief in power of, 214
- Java Man, 364
- Jesako* cult, Central Algonkin, 203
- Joking-relationship, 172
- Judicial systems, 177-183; Araucanian, 176; Déné, 179; Hudson Bay Eskimo, 179; Maya, 178; Mexico and Peru, 182; Nahua, 177-178; Peru, 177
- Kayak, Eskimo, 41
- Kia, 36
- Kings, Inca, 321-322
- Kiowa, 323
- Kiva, 114, 190, 279
- Knives, 122; copper, 124, 126, 274; types of, 124
- Labor, sexual division of, 14, 18, 241
- Lacandone, 68, 91, 245-246
- Ladder of Arrows, distribution of story, 210
- Land, assigned to family groups, 158; laws, Inca and Nahua, 186
- Language, areas, correlation with culture areas, 342; classification of, 333-334; index to origins, 383-384
- Languages, California, 334, 337, 341, 342; geographical types, 341-343; intergradation of, 331-332; manner of recording, by field-workers, 336
- Lasso, 35
- Leiotrichi*, found in Asian-American group, 362
- Lindenmeier site, types of artifacts at, 324
- Linguistic, classification, 331-346; diversity, in regions of higher culture, 344; investigation, chief result, 343; stock, conception, and meaning, 332; stocks, Amazon area, 253-254; stocks, California, comparative morphology, 341; stocks, California, phonetic uniformity of, 337; stocks, California, proposed consolidation of, 333-334; stocks, distribution of, 343-346; stocks, geographical grouping of, 341-343; stocks, grouping of, 333, 335; stocks, Inca area, 249; stocks, Mexico and Central America, 338, 339, 400-403; stocks, new grouping of, 334-335; stocks, New World distribution, 343-346; stocks, North America, 391-403; stocks, number of, 336; stocks, South America, 253-254, 340, 344; stocks, United States and Canada, 334-335, 391-400
- Linguistics, investigations in, 331, 332
- Linked clans, 167-168
- Literature, 144-153; Aztec, 246; myths regarded as, 153, 212
- Llama, domestication of, 32, 36; as a pack animal, 36
- Local groups, 162-164
- Loom, Antilles, 55; complex, distribution of, 55-57; in South America, 55; weaving, 55-57
- Mackenzie area, culture characterized, 233-236
- Madisonville mound, 276
- Magic Flight, distribution of story, 211, 381
- Maguey, southern extension of use, 43
- Maize, area of intense cultivation, 15-16, 32, 55; ceremonies, 195, 197; contemporaneity with pottery, 319; culture, aboriginal characteristics of, 19-24; culture, close agreement with distribution of pottery, 68; culture, concepts associated with, 186; culture, uniformity of, 21, 23; distribution of, 20, 68; domestication of, 318; foods made from, 14; history paralleled by history of higher cul-

- tures, 19; local adaptation of, 24; most important aboriginal agricultural product, 19; origin of, 23-24; Pueblo method of raising, 19; unity of New World complex, 21, 47
- Males, classification of, 173
- Mammoth, association of artifacts with, 324
- Man, antiquity of, in the New World, 323-326; dispersion from the Old World, 359-370
- Manabi, archæology of, 292, 293
- Mandan-Hidatsa, pottery, 69-70
- Manioc, area, 3, 55, 68, 165; chief food, Amazon Basin, 18; distribution of, 20; preparation for use, 24
- Manitou, 236; compared with *huaca*, 194
- Mankind, classes recognized, 362; distribution over the earth, 359-369; distribution of primary divisions of, 366; general lines of dispersion for, 368; general relation of Indian to, 359-370; primary strains of, 363; systems of classification of, 360
- Maple sugar, manufacture of, 13-14
- Marriage, ceremonies, 189; forms of, 188; mother-in-law taboo correlate of certain forms of, 172; regulations, 187-189; restrictions of, 165, 168, 174-175
- Masked ritualistic ceremony, 195
- Masks, Aztec and Inca, 198; North Pacific Coast, 198
- Masonry, at Mitla, 286; New World, 103; Pueblo area, 242
- Maté, 18
- Material culture, Antilles, 259; Araucanians, 251-252; Arawak, 254; California area, 227-229; Chibcha area, 247-249; Déné, 234-236; Eastern Woodland area, 236-239; Eskimo area, 231-232; Fuegians, 253; guanaco area, 251; Lacandonese, 245-246; Mackenzie area, 233; North Pacific Coast area, 229-231; Plains area, 222-224; Plateau area, 224-225; Southeastern area, 240; southwestern Déné, 234-235; Tupi, 257-258; typical Eastern Woodland tribes, 237-239; typical Eskimo, 232-233; Witto and Boro, 254, 256
- Matting, classification of, 53
- Mats, North Pacific Coast area, 229; for tipi covering, 111
- Mauer jaw, 350
- Maya, 16, 23, 28, 91, 102, 106, 107, 108, 118, 134, 135, 136, 141, 142, 143, 144, 147, 165, 167, 178, 190, 194, 196, 201, 204, 205, 212, 213, 244, 245, 246, 248, 287, 317, 321, 323, 329, 382, 383, 385; culture, New World origin of, 383
- Medicineman, defined, 201
- Melanesia, betel nut culture, 25
- Metal, high development of work in, Colombia, 291; work in, 129-131, 293, 381; work in, South Atlantic area, 268
- Metate, 244, 289
- Mexico, Valley of, dated chronology, 312-313
- Miamisburg mound, 271
- Midé ritual, 197-198
- Midéwin, Central Algonkin, 211, 222
- Midéwiwin, 238
- Migrations, Amazon tribes, 254, 259; myths recounting, 210; seasonal in accordance with food needs, 10-11
- Military rule, in Mexican government, 159
- Milk, Indian prejudice against, 36
- Minerals, mined in the New World, 128-129
- Mines, 128-129, 291; Hopi, coal, 140
- Minnesota Man, antiquity of, 374
- Mississippi culture horizon, 275-276, 314
- Mississippi-Ohio area, archæological characterization of, 271-274
- Mitla, Hall of the Six Columns, 107; mosaic designs at, 93, 286; ruins of, 286
- Mixed-blood Indian, face form, 349

- Mixtec, culture, 287
- Moccasins, bison area, 64; Pueblo area, 242
- Modeling in clay, 144; distribution of, 146; Peruvian pottery, 23-24, 93; pottery, Mississippi-Ohio area, 272; pottery vessels, 74-75
- Mogollon period, 280
- Moieties, division into, 217; functions, 168-170; summer and winter, 168
- Mongolian, affinities of New World man with, 359; orbital index, 356; peoples, most striking facial characters, 348; physical characters, found in Andean region, 352
- Mongoloid, affinity, of New World peoples, 352; character of nose in the New World, 348; frequency of shovel-shaped incisor among, 351; nose form, 357; peoples, hair of, 347-348
- Mongoloid-Red peoples, common ancestor group of, 384-385
- Mongoloids, geographical range of, 366, 375
- Monoliths, 108
- Monte Alban, ruins of, 286-287
- Morphological, analysis of man, 347; characters, New World languages, 333-334
- Morphology, comparative studies in language, 333-336
- Mortars, stone, 124-125; wood, 125
- Mosaics, feather, Peru, 60
- Mother-in-law taboo, distribution of, 172
- Mound, 172; area, 329; builders, Ohio, 128; structures, mouth of Amazon, 109
- Mounds, absence, North Atlantic area, 265; building on, to secure elevation, 102, 115; Chile, 294; South Atlantic area, 268, 269-270; in Colombia, 290, 291; Ecuador, 292; Great Lake and Upper-Mississippi area, 274; Mississippi-Ohio area, 271, 272; Patagonia, 296; pyramidal, distribution of, 105-106; shell, California, 281-282; shell, Florida, 268-269; shell, Venezuela, 292
- Mourning, Charrua, 253
- Murder, punishment for, 179, 181
- Music, 153-154; evidence of geographical areas, 154
- Musical instruments, 155-156
- Muskogean stock, 342, 344; grouped with Natchezan, 335; linguistic and tribal grouping, 395
- Mythological areas, 210-211
- Mythologies, distribution of, 209-211
- Mythology, 153, 207, 208-217; Amazon area, 256; California area, 228; Northern California area, 229; Eastern Woodland area, 238; probable means of transmitting culture traits, 382; Pueblo area, 243; symbolism in, 193; trickster type, Plateau area, 226
- Na-dene, proposed term for grouped North Pacific Coast languages, 335
- Nahua, 16, 102, 106, 112, 136, 158, 165, 178, 185, 186, 187, 190, 194, 201, 204, 205, 210, 212, 213, 286; area, characterization of culture, 244-247
- Nahuatl stock, combined with Uto-Aztec stock, 335, 391, 398, 399
- Names, clans, 174-175; designs, 97, 98, 99; not symbolic, 100-101; tribal, historical origin for, 161
- Napiwa, Blackfoot god, 213
- Narcotics, distribution of, 25-27
- Narrative, mythical, for origin of clan group, 174; prose, 152, 153
- Nasal, index, 356-357; skeleton, 356-357
- Natchez, 273
- Navajo, 38, 59, 81, 99, 111, 113, 149, 150, 160, 172, 182, 202, 203, 244, 370; blankets, 77; weaving, 59
- Navigation, 38-41
- Nazca, 95, 293
- Nebraska-Siouan culture horizon, 275
- Neolithic, culture, 305; deposits,

- 122; implements, 123; period, 327; period, in Europe, 367
- Nephrite, manner of working, 121; used in North Pacific Coast, 230; used in Thompson River region, 284
- Nets, antiquity of use, 47-48; birds taken in, 18; for fishing, 48; recent introduction among Eskimo, 48
- Netting, 47-48; southwestern Déné, 235
- New-fire ceremony, Inca, 250; Mexican, 196; Pawnee, 215; Pueblo, 197; Southeastern area, 241
- Nomenclature, system of, New World languages, 332
- North Atlantic area, archæological characterization of, 263-268
- Northern Mexico, archæological characterization of, 285
- North Pacific Coast area, 40, 88, 112, 121, 124, 133, 187, 205, 210, 214, 225, 235, 337; archæological characterization of, 284; characterization of culture, 229-231; phonetic traits, 337-338
- Nose, great variety in form, 348-349; skeletal structure of, 356-357
- Notched stick rattle, 155
- Numbers, recorded by *quipu*, 135; sacred in the New World, 216
- Nuts and seeds, wild, area of, defined, 3
- Nuts, oil made from, 14
- Oath, in the New World, 184
- Oaxaca, State of, archæological characterization of, 286-287
- Objective characters of man, most definitive, 362
- Offerings at shrines, 242-243
- Oil, nut, 14
- Old Algonkin period, 266, 267, 271; characterization of, 273, 314; evidence in Missouri River Valley, 275
- Ollantaitambo, 118
- Ollantay, an Inca play, 145
- Ona, 315
- Orbital index, distribution table, 356, 357
- Orbits, form of, 356
- Ordeals, in the New World, 185
- Organization, political, Inca and Mexican, 91, 159; simple tribal, nomadic tribes, 160; tribal, bands, fundamental units in, 162-163
- Origin, agriculture, 318; art, theories of, 97; Asiatic, New World culture traits, 381; Asiatic, New World man, 378, 384-385; Athapascan stock, 345; Chilkat blanket, 90; common, of single language family, 335; defensive armor, 137; double-curve art, 87-88; fundamental Old World culture traits, 380; independent, age-societies in the Plains, 173; independent, designs, Plains and California, 85; Maya culture, 383; New World peoples, 348, 359; New World totemic complex, 174-175; Plains art, 84-85; probable regions for domestication, 318; rituals, 207; Siouan stock, 345; southern, of Iroquoian culture, 237
- Origins, frequently detailed in mythology, 209; New World, 378-388
- Ornamentation, Maya and Nahua buildings, 107, 108; textiles and pottery, 76
- Ornaments, copper and gold, Maya and Aztec, 245; stone, 128
- Ozark Mountain culture, 273
- Pacific Islands, ceremonies, 195; New World culture correspondences with, 379
- Packing, methods of, 35-36
- Paddles, 40
- Painting, 144; body, 95; building interiors, 108; pottery, 71-72, 75; skins, 86
- Palenque, 103, 142
- Paleolithic, culture, 122, 305, 327; races, similarity of Eskimo to, 369
- Palisades, distribution of, 117-118
- Panama, archæological characteriza-

- tion of, 287, 289; area, designs, 93
- Pan-pipe, 156
- Paper, in Mexico and Central America, 136
- Patagonia, 8, 50, 62, 68, 339, 354, 356, 364; archæological characterization of, 296
- Pattern, in archæological classification, defined, 299, 302; composition in aboriginal music, 154; New York State, correlations with other culture horizons, 310-311; of rituals, 198
- Pawnee, 69, 151, 152, 160, 165, 169, 172, 197, 200, 202, 203, 205, 224, 329, 370
- Pecking, process of, 120
- Pekin Man, 364
- Pemmican, 7, 9
- Penutian linguistic stock, 334
- Peopling of the New World, 364, 366-367
- "Pepper-pot," characteristic dish, Amazon area, 19, 254
- Persimmon, bread made of, 14
- Personal property, 186-187
- Peru, archæological characterization of, 293-294
- Pestle, stone, distribution of, 124
- Phase, in archæological classification, defined, 299, 302
- Phonetic, analysis of language, by mechanical methods, 337; systems, 339; systems, United States and Canada, 339; uniformity found in California languages, 337
- Phonetics, characteristic of American languages, 337, 339; comparative, 336-341; geographical types of, 337-339
- Phratry, defined, 168-169
- Pictographs, in the Antilles, 289; Plains area, 276; on rock, 144
- Picture writing, 135
- Pigmentation, New World man, 348, 358, 359, 362
- Piki, maize bread, 16, 242
- Pile-dwellings, Northern South America, 109, 110; in Florida swamps, 110
- Pile-villages, South Atlantic area, 269
- Piman stock, consolidated with Uto-Aztecan stock, 335, 391; linguistic and tribal grouping, 396
- Pipe ritual, ceremonial, 198
- Pipes, 72; clay, South Atlantic area, 269; distribution and form of, 26-27; elbow, distribution of, 26-27; Eskimo area, 232; pottery, Iroquois area, 271; South Atlantic area, 269; stone, form and distribution, 125
- Pit-dwellings, 114-115
- Pithecanthropus, 350, 364
- Pit-houses, in Great Lakes area, 271
- Pits, house, 113-115
- Plains area, 124, 136, 139, 243, 251, 317; archæological characterization of, 276-278; area, characterization of culture, 220-224; traits, in Plateau area, 225-227
- Plant-growing trick, 203
- Plants, Central American, taken over and cultivated by Europeans, 16-17; cultivated before 1492, 15; food, aboriginal, 318, 319; peculiar to the New World, 330; used in eastern maize area, 13-14
- Plateau area, 243-244; area, characterization of cultures, 224-227
- Platinum, in the New World, 131
- Platycnemidia*, flattening of tibia, 350
- Platymeria*, flattening of femur, 350; presence of third trochanter correlated with, 350
- Pleistocene fauna, implements found with, 326; Plains area, 277
- Plumed serpent concept, wide distribution of, 214
- Plural marriage, 188
- Poetical merit, in aboriginal rituals, 212
- Poetry, aboriginal, 148-151
- Points, chipped, Folsom type, 324, 325
- Poison, fish taken with, eastern maize area, 14; upper Amazon, 19
- Police system, Pueblo, 182; Siouan,

- 180; tribes of the Gulf states, 181-182
- Political, organization, Aztec, 246-247; close uniformity of speech a correlate of, 331; Iroquois tribes, 239; in regions of higher culture, 193; solidarity, coincident with sibs, 165, 167; system, Araucans, 178; system, Déné area, 234
- Polynesian-European group, characteristics and area of distribution, 362
- Polynesians, affinities of New World man with, 360; recent arrivals in the Pacific, 379
- Pomo, 50
- Poncho, 62; skin, bison area, 64
- Populations, native, density of, 391; regions of lower culture, 344; total of Indians, United States and Canada, 391
- Popul Vuh manuscript, 323
- Porto Rico, stratification of shell-heaps in, 307
- Portrait jars, 75
- Potlatch ceremony, North Pacific Coast, 187, 230; Plateau area, 226
- Pottery, absence in early cultures, 312; basis of establishing culture sequences, 328-329; Casas Grandes, 285; Central American, 73; Central Mexico, 286; Chile, 294; Chimu, 293; Chiriquí, 75; close agreement with diffusion of maize, 68; Colombia, 291; contemporaneity with maize, 319; decorations on, 74, 75, 76, 77, 80, 99; diffusion of, 66-68; distribution of, 66-68, 312; Eastern Woodland area, 237, 239; Ecuador, 293; Eskimo, 232; firing, 140; forms of, 72-74; Inca, 250; index to culture sequence, 311-312; intense culture area, 93; intensive pursuit of the art in the South, 68; Iroquoian, 271; Iroquoian, North Atlantic area, 266; lower Mississippi, 69, 73, 74; making, distribution, 319-320; means of establishing chronologies, 279-280, 298, 299; Mexican, 72; Mimbres, 82; Mississippi-Ohio area, 272; mortuary, 269; Nazca, 293; North Atlantic area, 265, 266; North Atlantic and Upper Mississippi types, 70; painted, in Brazil, 95; Patagonia, 296; Peruvian, 73, 95, 293; Plains area, 276, 277; Porto Rico, 290; processes of manufacture, 68-74; Pueblo area, 242, 244, 279; Scioto Valley, 273; sequence, San Cristobal, 307; South Atlantic type, 70, 269, 270; Southeastern area, 91, 240; Southwestern United States, 71; state of Oaxaca, 287; tripod from Panama, 289; Venezuela, 292
- Power, shamanistic, source of, 201, 203
- Powhatan, 239
- Prayer, Navajo, 149-150
- Pre-Algonkin period, 266, 267, 268
- Presents, conventional exchange at marriage, 189
- Priest, Amazon area, 203; compared to shaman, 201-202, 205-206, 216; priesthood, 204-205; priesthood, organized, Aztec area, 246; priestly organizations, among the Hopi, 196-197
- Primates, lines of dispersion for, 365; phylogenetic relations of living and extinct groups, 365
- Privileges, social, 171-172
- Prognathism, 359
- Property, conceptions of, 185-187
- Puberty ceremonies, 195; California area, 228; Plateau area, 226
- Pueblo area, 32, 38, 50, 58, 60, 69, 80, 99, 106, 109, 111, 115, 117, 124, 129, 133, 136, 139, 160, 165, 167, 168, 182, 189, 191, 196, 200, 203, 212, 215, 247, 298, 315; area, archaeological characterization of, 278-281; area, dating of ruins by tree-ring method, 308, 309; culture, extension into Mexico, 244; culture, resemblance of Casas Grandes to, 279; influence on cul-

- ture of nomadic tribes of the Southwest, 243, 244
- Pueblo Bonito, dating by tree-ring method, 308, 309
- Pueblo, Calchaqui structures resemble, 109; form of modern, 106; head form, 373; periods, sequence of, 279-281
- Pueblo III period, 280
- Pulverizing, dried flesh and vegetables, salmon area, 10
- Pumpdrill, distribution of, 133-134
- Purification, for sacred offices, methods of, 215
- Quarries, 128-129; stone at Mitla, 278; Plains area, 276
- Quechua, 360
- Quiché, 323
- Quillwork, 82-84
- Quinoa, 19
- Quipu*, 135
- Quirigua, 143
- Quito, archæology of, 292
- Rabbit, as culture hero, 214
- Rabbit-skin blankets, Déné, 235; distribution of, 57; Northern Shoshonean tribes, 226; Plateau area, 225
- Rabbit stick, Pueblo area, 242
- Racial dispersion, 364-370
- Rain ceremony, Sia, 243
- Rattle, calabash, distribution, 155, 203
- Raven, culture hero, North Pacific Coast, 214; legends, North Pacific Coast, 230
- Rawhide, painting, bison area, 84; rattles, 155; work in, 222
- Realism, in designs, 78-79; textile art, 91-92
- Realistic, art, New World, 100; art, produced by men, 96; art, rarity of, 76; carving, 88-89; carving, in architectural decoration, 93; designs, bison area, 82-84; designs, caribou and eastern maize area, 85; designs, North Pacific Coast, 89; designs, Peruvian textiles, 93; designs, pottery, 80-81; origin of art, theory, 100-101
- Reciprocal terms of relationship, 171
- Redoubts, Mississippi-Ohio area, 271
- "Red-paint," burials, 266; culture, 266-267
- Reed instruments, 155, 156
- Refuse, deposits, California area, 282; heap, San Cristobal, stratification at, 307
- Regulation, social, in North America, 177-192
- Reindeer, culture, associated with tipi, 112; used in transportation, 32
- Relationship, systems, 170-171; terms, 162, 163-164
- Religion, Chibcha, Maya, and Nahua, 194; Maya, Nahua, and Inca, 136; New World, source of, 206; and ritualism, 207
- Religious, conceptions, and mythology, 213-217; culture, Pueblo Indians, 196-197; culture, Siberia, 204; system, Aztec, 246-247; system, in Peru, 193-194
- Revenge, personal freedom to, 179-180, 181
- Rhea, economic importance of, 8
- Rhythm, in aboriginal music, 154
- Rice, wild, as food, 13
- Rio Grande Pueblos, 241
- Ritualism, 193-199; Aztec, 246; Eastern Woodland area, 238; high development of, coincident with distinction between priest and shaman, 202; maximum development among Maya, 204-205; personal relation in, 206-207; Pueblo area, 242-243; Southeastern area, 240-241; Southwestern area, 242-244
- Ritualistic, observances, 193-207; performance, California, 198; plays, North Pacific Coast, 198; procedures, Pueblo, 196-197; system, North Pacific Coast area, 230
- Rituals, agricultural, 196; association with composition patterns in music, 154, 156; dramatic and po-

- etical merit of, 212; Pacific Coast, 198; salmon fishing, Déné, 236
 Road-building, Mexico and Peru, 108
 Rock-shelter, Kentucky, 273; near New York City, stratification in, 306; North Atlantic area, 265, 266
 Rolling rock, distribution of story, 210
 Roofs, Nahua and Peruvian buildings, 106
 Rooms, size, influenced by absence of arch, 102; size, Nahua buildings, 106
 Roots, as food, 8, 234
 Rope-tying trick, distribution of, 203
 Rowlock, used by Eskimo, 40
 Ruins, ancient Maya cities, 287, 289; Colombia and Venezuela, 290; historical relation of, 104; most impressive in the New World, 244; Pueblo area, groups of, 278-279; Southwest area, dating by tree-ring method, 308-309
 Rulers, Aztec, 322; Inca, 321
 Sacrifices, animals and inanimate objects, 195; to gods of the Peruvians, 195; great number of Aztec, 246, 247; human, 205; human, Maya and Nahua, 194-195; human, Pawnee and Pueblo, 197; Inca area, 250
 Sacsahuaman, 118
 Sagebrush bark fiber, distribution and use, 42; weaving, 55
 Sails, use of, 40
 Salishan stock, 344
 Salmon, area, 3, 9-11, 31, 35, 47, 55, 62, 165, 198; caught in acorn area, 12; methods of catching, 10
 Salt, manufactured and traded, Colombia, 17
 Sandal, a correlative of textile clothing, 64
 Sandals, 65
 San Cristobal, stratification at, 307
 Santa Barbara focus, California area, 282
 Santa Rosa Xlabpak, restoration and groundplan, 105
 Sauk, 169
 Scales, in aboriginal music, 153-154
 Schools, for children, 190-191
 Sculpture, center of New World, 141; distribution of, 146; Maya, 122, 141-144, 382, 383
 Seats, stone, 125
 Seeds, wild, area of, 11-12
 Sequences, of culture, examples of, 310-315; historical, 320-323; inferential, 315-320
 Serpent Mound, 272
 Shaman, distinguished from medicineman, 201-206; distinguished from priest, 216; relation to judicial system, 183-184
 Shamanism, 201-206; Amazon area, 256; California area, 228; Déné area, 235; Eastern Woodland area, 238; guanaco area, 252; Siberia, 204; Southeastern area, 241
 Shawnee, 239
 Shell, deposits, California, 314; deposits, North Atlantic area, 263; objects, Mississippi-Ohio area, 272; objects, South Atlantic area, 269; work in, California, 282
 Shell-heaps, Florida, stratification of, 306; North Atlantic area, 265, 266, 268; South Atlantic area, 268, 269
 Shell mounds, Atlantic Highlands, 295; California, 281, 282; Chile, 294; Patagonia, 296
 Shelter, Shoshonean tribes, 226
 Shields, circular, distribution and origin, 137, 139; rectangular, in Peru, 139
 Shoshonean, culture, 226; stock, 335, 339, 344; stock, combined with Nahuatl, 335, 345, 391; stock, linguistic and tribal grouping, 397-398
 Shoshonean-Nahuatl, stock, 344, 345
 Shuttle, netting, distribution of, 48
 Sib, defined, 165; relation to classificatory system of relationship, 170
 Signal drums, 156

- Silver, aboriginal working of, 130, 131
- Sinew, used in making skin clothing, 43-44
- Sinkers, notched pebbles used as, 48
- Sins, confession of, 216
- Siouan stock, 333, 344
- Sioux, bodily proportions, 361
- Skeletal finds, antiquity of, 374
- Skin, clothing, tailored, 60-65, 385; color, basic in the New World, 348; dressing, Plateau, 225; dressing, Southeastern area, 240; designs painted on, 84; painting on, 86; range in the New World, 358
- Skin Shifter, distribution of story, 210
- Sledges, Eskimo, 30, 32
- Slips, for coloring pottery, 71
- Smelting, of metals, 130
- Smoking, diffusion of, 27; opium type of, 381
- Snake, dance, Hopi, 243; society, Hopi, 204
- Snares, for game, Déné, 235
- Snaring, caribou, 233; among Eskimo and Indians, 6
- Snaring the Sun, distribution of story, 210
- Snowhouse, distribution of, 114
- Snuff taking, distribution of, 25, 27
- Soapstone, vessels of, 74
- Social, control, 177; grouping, 158-176
- Social organization, 162-164; Amazon area, 256; California area, 228; Chibcha area, 248; Déné area, 235; Eastern Woodland area, 238; guanaco area, 252-253; Inca area, 250; Northern California, 229; Plains area, 222; Pueblo area, 242; similarity of Mexico and Peru, 178; Southeastern area, 241
- Social, privileges, 171-172; regulation, 177-192
- Societies, 173-174; Plains Indian, 222, 317
- Society, evolution of, 175
- Somatic, characters, grouping by, 370-372; characters, group resemblances in, 371; characters, summary of, 358-359; characters, unity of New World peoples, 375-376, 384; classification, 347-377; grouping, roughly coincident with culture grouping, 371; homogeneity, in the New World, 357, 375; type, unity of, 343, 375, 376; units, primary inbreeding local social groups, 370
- Song, association with rituals, 154, 156; Dakota Fox society, 152-153; tablets, Algonkin, 147; war, Pawnee, 151-152
- South Atlantic area, archæological characterization of, 268-270
- Southeastern area, 91, 237; culture characterization of, 239-241
- Southwestern area, culture characterization of, 241-244
- Speech, American peculiarities of, 337; reasons for individuality in the New World, 331
- Spindle, 46, 57; European, 46
- Spindle whorl, distribution of, 44-45, 132; pottery, 291
- Spinning, 44-47; cotton, 47; methods and distribution, 45-47; with a spindle, 57; without a spindle, 55
- Spint basketry, 53
- Stalagmites, dating of, 309-310
- Stamps, pottery, for printing cloth, 291
- State of Oaxaca, archæological characterization of, 286-287
- Stature, geographic grouping of, 370-372
- Steatite, vessels, 265; work in, 126, 276
- Stelæ, 107; dated, 287, 317, 321
- Stock, language, determination of, in the New World, 332; linguistic defined, 332
- Stocks, linguistic, consolidation of, 391; distribution of, 343-346; most widely distributed, 343-344; United States and Canada, number of, 332, 336

- Stone age culture, Maya, 245; in the New World, 122, 386
- Stone, boiling, 52, 225, 229, 235; carving, 141, 283; implements, Mississippi-Ohio area, 272; implements, Great Lake and Upper-Mississippi area, 274; implements, types of, Iroquoian area, 270; implements, types of, North Atlantic area, 265, 266; implements, South Atlantic area, 268; implements, Plains area, 276, 277; objects, Antilles, 289; objects, problematical, 125-126; objects, total distribution of, 127; pipe, 125; quarrying, 128-129; vessels, Plains area, 276; work in, 119-128, 386; work in, Aztec area, 246; work in, Colombia, 291; work in, Mitla, 286; work in, Panama, 289; work in, Southeastern area, 240; work in, Tiahuanaco, 293; work, periods of, in Europe, 119
- Stone-Boy, story of, 211
- Stratification, archaeological, 263; California area, 283; examples of, 306-307; Florida shell mound, 269-270; Kentucky rock-shelters, 273-274; in rock-shelters, North Atlantic area, 268
- Stratigraphy, 306-308; Central Mexico, 286; Maya area, 287; North Atlantic area, 268; Venezuela, 292
- Stringed instruments, absence in the New World before discovery, 155
- Structure, language, 336
- Sun, ceremony, in Peru, 195; dance, 198, 222; offerings to, 205; in religious system of Peru, 193
- Supernatural guardians, 199-201
- Sweat house, distribution of use, 215
- Sword-swallowing trick, distribution, 203
- Symbolism, 97-101; in mythology and ritualism, 193; Pueblo pottery designs, 82; strong development in the Southwest area, 100
- Symbols, true, in New World art, 99, 100
- Systems of relationship, 170-171; classificatory, 170; descriptive, 170
- Tablets, bark, containing midé ritual, 198
- Taboo, against fish, bison area, 6; against fish, Pueblo tribes, 16; mother-in-law, distribution, 171-172
- Taboos, 171-172; Eskimo area, 232; against women in ceremonies, 195
- Tales, distribution in North America, 210-211; Old World, found in America, 211; types of, 208-209
- Tasmanian, 356, 364
- Tattooing, found in cotton-using area, 48
- Technique, limitation in bead and quill work, 82, 84; weaving, limitation to design, 77, 78
- Techniques, in basketry, 49-50, 51, 80; coil and twine, concentric distribution of, 50, 52
- Teeth, as definitive character, 350-352, 359
- Tempering materials, for pottery, 71, 269
- Temple of the Cross, cross-section of, 103
- Temples, to the sun, lower Mississippi, 197, 240
- Terraces, use of, in Peru, 105
- Test theme, in mythology, 209-210
- Teton Dakota, 261
- Textile, art, importance of, at time of Spanish conquest, 57; arts, 42-65; designs, 76-80; development, eastern maize area, 59; development, Gulf States, 90
- Textiles, cliff-house, 58, 82; Inca, 93; Maya, 91-93; Mexican, 91-93; North Pacific Coast, 90; Peruvian, 93, 95, 293; poor development in caribou and eastern maize area, 90
- Thatched structures, distribution and varieties, 110
- Thread-making, a universal trait, 44, 53

- Thule, culture, characterization of, 284; period, Arctic area, 312
- Thunderbird, concept, wide distribution of, 214
- Tiahuanaco, 108, 293
- Tibia, flattening of, 350
- Time, methods of reckoning, 136; perspective, dated stelæ, most important aids to, 287; relations, Maya carvings, 317; relations, pottery and maize, 68; relations, Pueblo area, 315; sequence, California, 283; sequence, in culture, 305, 306; sequence, methods of determining, 306-307; sequence, pottery as an index to, 298, 299; sequence, Pueblo area, 280-281; sequences, Arctic area, 284-285
- Tin, contained in Peruvian bronze implements, 130-131
- Tipi, construction and types, 111-112; in the Mackenzie area, 236; used by nomadic tribes of the southwest, 243
- Tipiti, basketry press for cassava, 24
- Titicaca, 95; a sacrificial shrine, 195
- Title to lands, held by family group, 185
- Tlingit, 112
- Tobacco, aboriginal forms of taking, 25-27; burning, as a means of purification, 215; chewing, distribution of, 25, 26; cultivation of, 13; distribution of, 26
- Toboggan, distribution of, 31
- Toltec, 286
- Tombs, cross-shaped at Mitla, 287
- Tools, copper, distribution of, 129-130; copper, Peruvian, 130-131
- Topography, guanaco area, 251; Inca area, 249; Plateau area, 224
- Tortillas, 16
- Totemic features, 174-175
- Totemism, 200-201, 378-379
- Totem-pole house, structure and distribution, 112
- Totem poles, 112; carved, 89; North Pacific Coast area, 230
- Totems, 174
- Totonac, 244; sites, glazed pottery from, 71
- Trade, between Alaska and Siberia, 41; Maya with Cuba, 245
- Tragedies, Inca, 145
- Traits, culture, borrowed, among Déné, 235-236; independently developed in the New World, 379-381
- Transport, animal, distribution of, 29
- Transportation, California area, 227-228; Chibcha area, 248; Déné, 233, 234; by dogs, distribution of, 29; dog and travois, 222; Eastern Woodland area, 238; Inca area, 250; methods of, 30-36, 38-41; methods of, in Mexico and Pueblo area, 32; Northern Shoshonean tribes, 226; North Pacific Coast area, 229; Plateau area, 225
- Travois, 31; in bison area, 33; horse, 35; not found in Siberia and Alaska, 32
- Tree-ring method of dating, 307, 308-309
- Trial, form of, among Ojibway and Micmac, 181; idea of, found in regions of intense culture, 183; Iroquois, 181
- Tribal groups, Chibcha area, 247; Eastern Woodland area, 236-237; guanaco area, 251; Inca area, 249; intermediate in culture, California, 228; Mackenzie area, 233, 234; Maya, 244; nomadic peoples of the Southwest, 243, 244; Plains area, 220, 222-223, 224; Plateau area, 224, 225, 226; Southeastern area, 239; Southwestern area, 241, 243, 244
- Tribes, dominant, in various culture areas, 261; historic, 220
- Tribute, brought to Mexico City, 35
- Tricks, shamanistic, 203-204
- Trochanter, third, frequency of, 350
- Trumpets, 156; Bronze age, 148
- Tubular pipe, distribution, 125
- Tuckahoe, bread made from, 14
- Tumpline, 36, 37

- Turkey, domestication of, 16, 28, 38, 241-242
- Turtles, great, at Quirigua, 143
- Twined basketry, 50, 52
- Twins, story of, 211
- Uaupés, 195
- Ulotrichi, found in Australian-African group, 362
- Underground houses, 113-114; Plateau area, 225, 226
- Unfaithful Wife, distribution of story, 211
- Urn burial, 73, 109, 268, 269, 294, 295
- Uto-Aztecán, linguistic stocks combined under, 335
- Uxmal, 104
- Vaginal Teeth, distribution of story, 211
- Variability, of head form, 354
- Vegetable, foods, salmon area, 9-10; Southeastern area, 240; southwestern Déné, 234; products, secondary dependence on, in various areas, 9-11
- Venezuela, archaeological characterization of, 290-292; highland populations exterminated by the Spaniards, 17; stratigraphy, 313
- Ventriloquism, in Amazon area, 203
- Venus, important god of the Aztec and Maya, 196
- Verse, aboriginal, 148; origin of, in song, 148, 153; Eskimo, 150-151
- Vihuk, Cheyenne god, 213
- Village sites, North Atlantic area, 265, 266
- Villages, fairly permanent, salmon area tribes, 10
- Viracocha, Inca god, 213, 250; Peruvian culture hero, 193, 196
- Vision, to obtain personal guardian, 199
- Vocabularies, classification of linguistic stocks, based on, 333-334
- Vow, diffusion of concept, 215-216
- Vowels, stopping of breath with, 337
- Wabano cult, Central Algonkin, 203
- Wakan, compared to Peruvian *huaca*, 194; defined, 216
- Walls, defensive, 270; forms of, 106; New World buildings, 102
- Walum Olum, Delaware, 323
- Wampum, belts woven of, 86
- War, 191; honors, graded, 191; song, Pawnee, 151-152
- Water-tuned drum, 156
- Weapons, 137-139; guanaco area, 251; North Pacific Coast area, 230; Plateau area, 225
- Weaves, basketry, 49; fineness of, in Peruvian cloth, 57-58
- Weaving, cedarbark, 55; Chonoans, 253; Déné region, 87; distribution of, 56; Eastern Woodland area, 238; high development among the Maya, 245; Huichol, 91-92; Inca area, 250; Maya, 92-93; modern Mexican, 91-93; Navajo, 77, 81-82; North Pacific Coast area, 229-230; Northern Shoshonean tribes, 226; Ojibway, 54; Pueblo area, 241; sagebrush bark, 55; Southeastern area, 240; technical limitations of, 77, 78, 82, 84; technique, influence on design, 77, 79; types in the New World, 53, 54-57; wild goat wool, 55, 57
- West Indies, 18, 23, 36, 38, 40, 141
- Wheel, absence, in New World culture, 32, 68, 132, 134, 381; development in the Old World, 132
- Whipping, ceremonial, 191, 195-196
- Whirling log, symbol, Navajo, 99, 100
- Whistles, 155
- Whistling jars, 73, 250
- White River sites, artifacts from, 325
- Wickerwork basketry, 52
- Wild plants, as food in Pueblo area, 16; seeds, area of, 11-12
- Wild rice culture, Eastern Woodland area, 13, 237
- Wind instruments, 155, 156
- Windows, rarity of, in New World houses, 102

- Witches, trial of, among Iroquois, 181, 183
- Wives, exchange of, 188, 232
- Woman who Went to the Sky, distribution of story, 210
- Women, agricultural work of, 14, 18; taboo against, in ceremonies, 195
- Wood, architectural use of, 106; armor of, 137; carving, 112, 230, 232, 284; work in, Plateau area, 225
- Woodland culture horizon, characterized, 314; Illinois, 275, 276
- Wool, distribution of use, 42; Navajo use of, 59; spinning of, 46, 47
- World quarters, four, 216
- Writing, Chichimec period, 286; invention of, 134-135; Maya system of, 134, 246; practised in Mexico, 134-135
- Yahgan, 315, 339, 360; stock, 251
- Yakima Valley, intermediate culture in Columbia Basin, 284
- Year counts, pictographic, 134-135; Plains Indians, 147
- Yokes, stone, Mexico, 125
- Yucatan, 57, 141; archæological characterization of, 287
- Yuma, point, 277; site, artifacts from, 325, 374
- Yuman peoples, 228; stock, grouped under Hokan, 391; stock, linguistic and tribal grouping, 400
- Zapotec, 244; culture, 286-287; stock, linguistic and tribal grouping, 415
- Zero, discovery and use in mathematics by the Maya, 135
- Zume, Tupi god, 213
- Zuñi, 82, 172, 241; stock, 400

